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COVER: John Berkey adds his own special touch to the stars of Star Trek Voyager and Star Trek Deep Space Nine. Turn to page 24 for our behind-the-scenes coverage. ABOVE: Our Gallery this highlights the malleable Nicholas Jainschigg. See page 76 for further eye candy.

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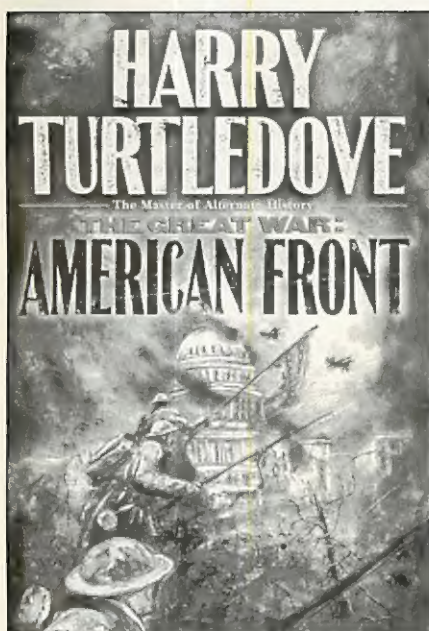
by Gene O'Neill

Though the Alien Irazii called Jacob Silva a guest, he was sure that their space rescue was instead a kidnapping. But what could they possibly want with an Earther?

STORIES THAT DEFINE IMAGINATION!

EXTRAORDINARY DEL REY TALES

This month featuring:

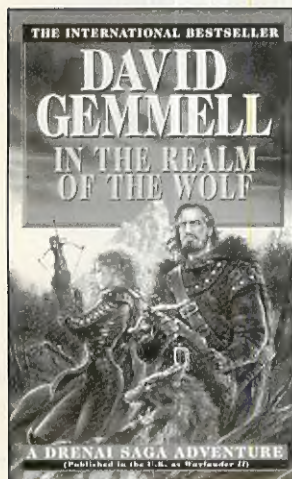
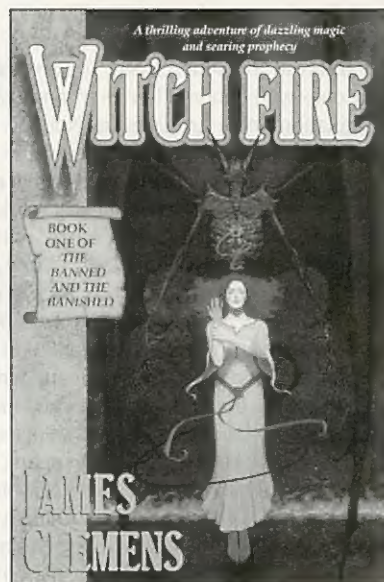


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The readers have chosen the finest *SF Age* fiction of 1997.

ACCORDING TO THE BUZZ ON THE SF street, 1997 was the best year *Science Fiction Age* has had so far in terms of the quality of its fiction. As I write these words, I have already heard of six reprints of stories in the two competing anthologies that publish the best SF of the year. Reviewers, critics, and your letters together tell me that this was our strongest year yet.

I said it before, when we celebrated our fifth anniversary a few issues back, but let me say it again: Thanks for your support. Starting a new science fiction magazine is rough going, and keeping it alive is rougher still, so I have to thank both the writers who took us to brave new worlds and you readers who chose to follow them here in our pages.

As a reminder, works of fiction are only considered short stories when they are 7,500 words or less, novelettes are over 7,500 but under 17,500 words, and novellas are those works over 17,500 words that are not long enough to be considered a novel.

Your choice for favorite novella was:

"Marrow" by Robert Reed: You are not the only ones who honored Reed's triumph of the imagination from our July issue. Not only was it on the *Locus* recommended reading list, but Mark Kelly, short fiction reviewer for that magazine, chose it as one of the ten best stories of the year. Additionally, the story will be reprinted in Gardner Dozois' *The Year's Best Science Fiction* from St. Martin's Press. I marvel at Reed's accomplishment; he was able to squeeze a novel's worth of extrapolation into novella size. In a time when so many writers are stretching ideas that would have made good short stories across massive trilogies, it's good to see a writer with ideas to spare; that alone is enough to create a sense of wonder. Since you can't get enough Reed to satisfy you in our pages alone, track down one of his many excellent novels, such as *Down the Bright Way* and *The Remarkables*.

For favorite novelette, you chose:

"Moon Six" by Stephen Baxter: Baxter has once more managed to encapsulate a nostalgia for a lost future. His March story of a trip from the Earth to a Moon that may or not be our own will also be reprinted in the Dozois annual anthology alongside "Marrow." Readers who need another fix of Baxter won't have to wait, because the latest installment in his series of "Saddlepoint" tripartite novellas is at the heart of this issue.

Since the short story category makes up the bulk of the fiction we publish, we're presenting the top three contenders:

"On the Inside" by Robert Silverberg: This November look at a human quisling who helps the aliens conquer our world was one of three stories published by Silverberg in this universe. (After 45 years working as a professional at one of the hardest crafts in the world, he'd better place first.) One of his other stories from that set, "Beauty in the Night," has also been chosen for the Dozois *Year's Best SF*, meaning that the reader favorites in each three categories will be collected together. It all goes to prove that great minds think alike. Watch out for the latest installment of Silverberg's epic Majipoor saga, which he has just turned in to his publisher.

"Your Eyes, My Darling, Black and White and Blue" by Karen Haber: This May story that told of a human's visit to an alien world was voted as the second favorite by readers. In a *Science Fiction Age* first (and perhaps a first for any SF magazine), this is the only time that the top two short story entries were each written by half of a married couple. That's right—Karen Haber, accomplished novelist, short story writer, editor and art critic in her own right—is the wife of Robert Silverberg. For another Haber tale, you need look no further than this issue.

"Deep Space Sein" by Thomas Marcinko: You liked this July issue piece that was a cross between *Seinfeld* and *Star Trek* enough for it to get the bronze. Even though Jerry and the gang are going away, it's obvious that you all felt there would still be a place for *Seinfeld* centuries from now.

That's it for 1997, which only now can I feel has fully drawn to a close. Pay close attention to our '98, because that's where you'll find the finest fiction of the year.

One last thing—an apology for a glitch that might have impeded your enjoyment of one of those '98 stories. A computer error caused two lines of priceless prose to be dropped from Brian Stableford's story "The Tour" in our January issue. The boxed quote at the top of page 69 was slightly too large and unfortunately obscured the first line of each of the two columns on that page. Column one should have begun "I could tell that she didn't know what a hippogriff was, but she", and the first line of column two was meant to be "just like you or me but lost in the wilderness of infinity." Our apologies to Mr. Stableford, and to you our readers as well.

Science fiction has taught us that computers can sometimes be dangerous, but it never predicted this!

Scott Edelman

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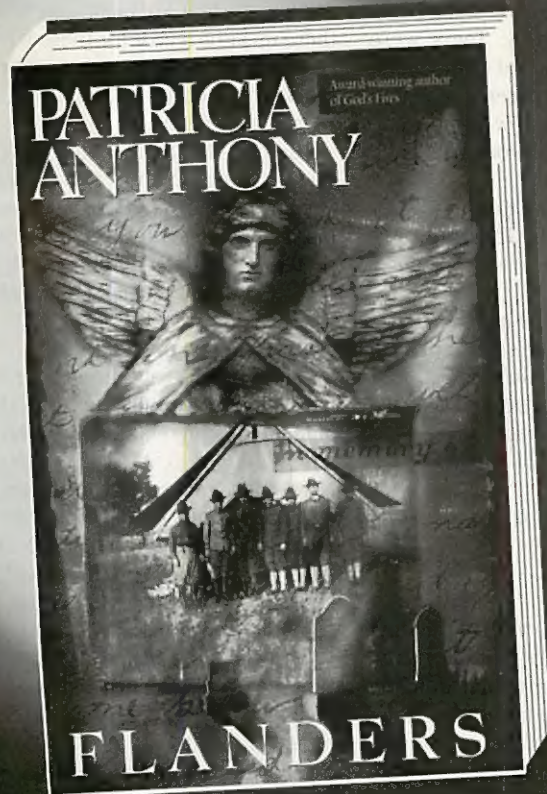
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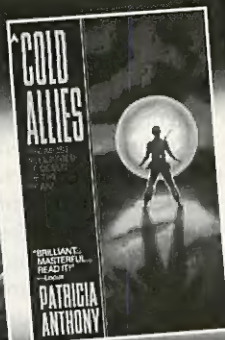
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LETTERS

Dear Mr. Edelman and SFA:

I've been reading your magazine for less than a year, and it is definitely one I will continue to read. The stories are great, and of course, are the reason that I get your magazine (although being an avid gamer, I look forward to the game review section).

Please pass on my praise to David Gerrold for his "Jumping Off the Planet." Not only did I immensely enjoy it as a wonderful and captivating story, but also because it truly touched my heart.

Being the middle child in the family, I could easily place myself in Charles' shoes. I've seen many of the same and similar problems within my own family. Tears were brought to my eyes by the end of the story, and I'll definitely have my parents read it in hopes that they may get a new perspective on our family conflicts and work with each other to solve things.

Thanks again,
Kevin L. Gregory

Dear *Science Fiction Age*:

I noticed in Vincent Di Fate's *Infinite Worlds* a painting which he says appeared in *Science Fiction Age*, July 1976. Just wanted to congratulate you and ask if I could borrow your time machine.

Steven H. Silver

Sure—in fact, we'll trade it for a copy of that July 1976 issue.

Dear Mr. Edelman:

I had ethical difficulties with "Founding Fathers" in your March 1998 issue. If the author's intent was to show that in many cases, no one's views are entirely just, then he succeeded. Certain things incline my opinion otherwise. I suspect he was bowing to the prevailing climate.

In his story we have a group, with very narrow-minded racial beliefs, who naturally are inclined to persecute other racial groups. Aside from changing their beliefs, they have done the best thing: removed themselves as far as possible from conflict. Enter a group of outsiders of different beliefs. They are a politically correct (for them, not the planet they have landed on) racially-mixed group. They also tend toward persecution. They persecute unpopular ideology. Racial supremacist beliefs (white or black) have their sinister side, but to be criminal, crimes must be committed. Political incorrectness is not a crime—yet. Paratene and Carmichael were the least objectionable characters, to me. Toure

struck me as a self-righteous, bigoted hypocrite. Perhaps the author meant to show both extremes.

What about Toure's three new bodies that were cloned? Just bodies to be usurped? They were not regarded by her as legitimate entities?

The intelligentsia (or what regards itself as such) tends toward liberal-elitist notions. Liberal-elitist notions tend toward the socialist police state. Correct me if I'm wrong.

Mind control (or thought control) is not a legitimate tool of government. We must have the liberty of choosing whether or not to obey the law. We must have free will, but there must be a cost for those who disobey, in order for this system to work. In this respect, the current crop of liberal judges do not have a clue.

I do hope the SF & F field prospers. But I do hope we all mature past knee-jerk political correctness. Mr. Dedman, please forgive me if I have misinterpreted. If I have interpreted correctly, then phooey on you.

Ivan Leon Walters

Dear Mr. Edelman:

One word to say about your magazine: fantastic, but you probably get that a lot. I am a major fan of science fiction on television (*Babylon 5*, *X-Files*, *Twilight Zone*), movies (*Star Wars*, *Independence Day*, *Men In Black*), and books (*Foundation*, *Red Mars*, anything by Ray Bradbury). I don't care, I like it all! You do a great job on all levels. (I am also a fan of fantasy, so I really enjoy *Realms of Fantasy*, too.)

On a personal level, your January '98 issue was the best yet. Normally you have some great stories, some average, and some horrible, but in this issue, all five were great. Scott McKay's "We" was frightening but sad. Brian Stableford's "The Tour" was fine, as was Wil McCarthy's "Outland." "Fat Cat on a Hat" by Nick DiChario made me smile, but top honors go to David Gerrold's "Jumping Off the Planet." I kept reading Gerrold's fine story and only had to pause because I was in school and had to walk to my classes.

Keep up the good work in '98 and I hope the stories will be as good as the ones in '97. Put me down for another year.

Sincerely,
Sara Porter

Readers — please let us know how we're doing at: Letters to the Editor, Science Fiction Age, 11305 Sunset Hills Rd., Reston VA 20190. For e-mail, use scottedelman@erols.com, or our CompuServe address of 102746,2004.

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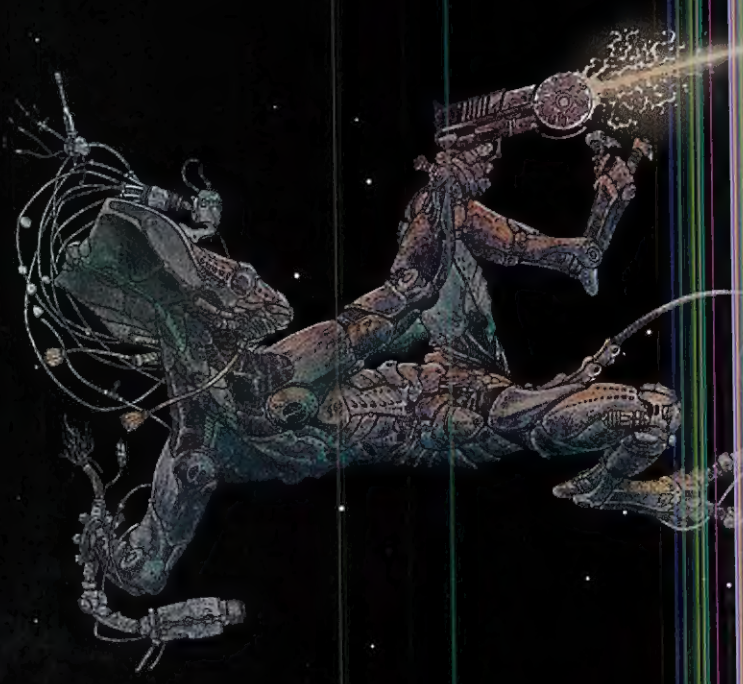
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BOOKS

By Thomas Marcinko, D. Douglas Fratz and Paul Di Filippo

Isaac Asimov's legacy lives on in Greg Bear's *Foundation and Chaos*.



Foundation and Chaos is the middle book of the Asimovian trilogy being written by SF's "killer B's" — Gregory Benford, Greg Bear and David Brin.

IT'S DIFFICULT TO IMAGINE MODERN SCIENCE FICTION without Isaac Asimov's original *Foundation* trilogy. The *Foundation* stories — the first appeared in 1941 — have influenced every writer of space sagas from Frank Herbert and C.J. Cherryh to even Doris Lessing. It's even harder to imagine the TV and movie galactic empires, federations, dominions, and alliances without Asimov's influence. He was not the first storyteller to explore interstellar space, but he was among the first to describe an organized galactic society, a vision rivaling that of Olaf Stapledon in the 1930s.

The *Foundation* books bracket Asimov's career. He folded his 1940's stories into his fourth novel, *Foundation* (1951), followed by *Foundation and Empire* (1952), and *Second Foundation* (1953). He returned to his galaxy in 1982 with his first nationwide best-seller, *Foundation's Edge*, wrote a follow-up, *Foundation and Earth* (1986), then two prequels, *Prelude to Foundation* (1988), and his last novel, *Forward the Foundation* (1993). He also backtracked to link the *Foundation* series with his robot stories in *Robots and Empire* (1985).

Although the latter-day *Foundation* books met with mixed reviews, the original trilogy is certainly one of the best-loved and best-remembered works in science fiction. Who else but Asimov, heavily influenced by *Astounding SF* editor John W. Campbell Jr., could have given us the fall of the Galactic Empire, foreseen by the new science of "psychohistory" and its prophet Hari Seldon? It was the ultimate in cerebral wide-screen entertainment for its time. Armed with a kind of hyper-sociology called psychohistory, Seldon has foreseen the fall of the Galactic

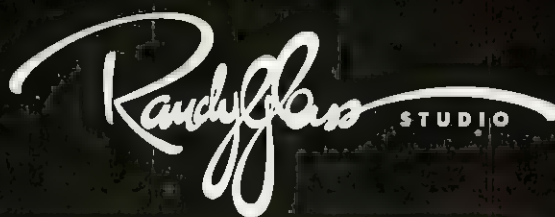
Empire and is trying to minimize the barbarism that will follow with a thousand-year plan, conducted by twin Foundations designed ostensibly to preserve knowledge and civilization. But as Asimov's readers know, there's more to these Foundations than meets the eye.

It's a scenario as well known to long-time SF readers as the *Star Wars* story line is to moviegoers. So it takes a lot of nerve for other writers to stake out new territory in Asimov's universe, let alone a round-robin collaboration between three admittedly noted authors. Last year, Gregory Benford wrote the first in the "Second Foundation Trilogy," *Foundation's Fear*, which is now followed up by *Foundation and Chaos* (Harper Prism, hardcover, 341 pages, \$24.00) by Greg Bear, which will be followed by David Brin's *The Secret Foundation* next year.

While these acclaimed authors probably jumped at the chance to play in Asimov's universe, they must know some readers (though not this one) will resent the attempt. More seriously, they're also braving criticism for caving in to the franchise fever that's been sweeping SF. That said, the least we can expect is an entertaining novel that builds on Asimov's universe without slavish copying. Within these limits Bear meets the challenge deftly, giving us a cerebral page-turner that often feels like an Asimov novel.

The book is set around the time of *Foundation*, recasting events and even dialogue from different camera angles. Bear also picks up the thread of Asimov's attempt to unify his robot and *Foundation* series.

Once again we meet R. Daneel Olivaw, leader of a benign group of robots conspiring to guide humanity while remaining hidden among us. Daneel has also been



FOR SERIOUS FANS & ART COLLECTORS

A long-time friend of Robert Picardo ("The Doctor" on *Star Trek: Voyager*), RANDY GLASS is an internationally known illustrator and portraitist. He created this piece at the actor's suggestion, as a unique tribute to these nine friends and co-workers.

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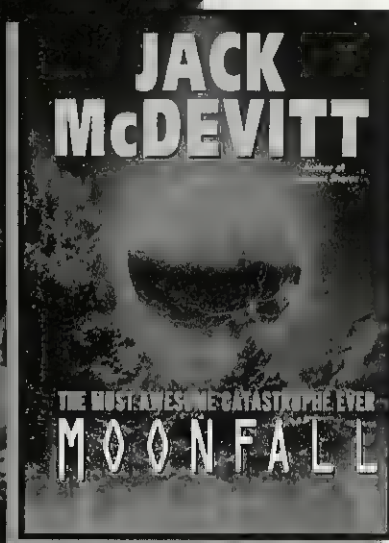
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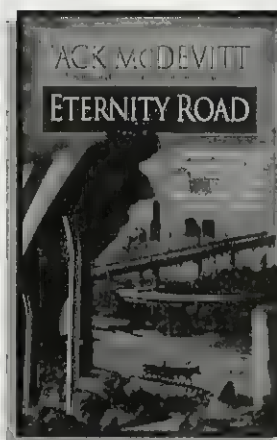


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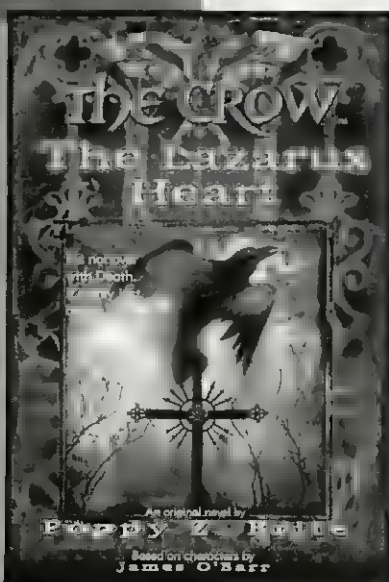


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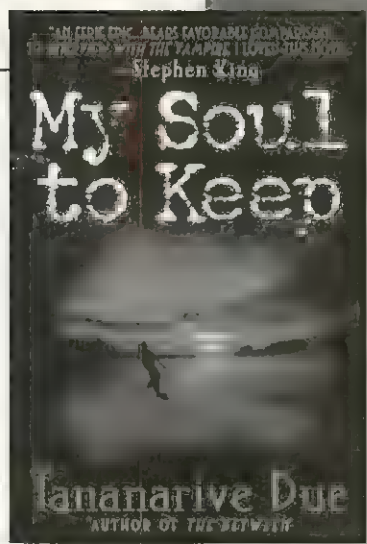
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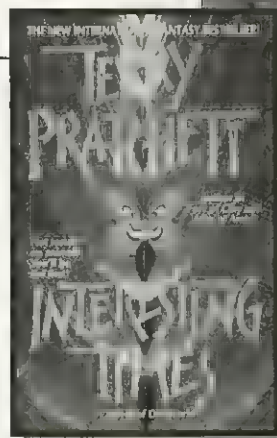
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manipulating the life of the prophet Seldon, going so far as to fix him up with a wife who, unknown to Seldon, is really a robot. Our story opens as Daneel's right-hand bot, Lodovik Trema, suffers radiation damage to his positronic brain and finds himself free to disobey the Laws of Robotics. Intriguingly enough, Lodovik is like a religious believer who's lost his faith; he really still wants to obey the laws. We also learn there's a schism among the bots: A faction opposes Daneel, wishing to stop manipulating humans and getting back to the business of serving them openly.

Complicating things further: While Seldon awaits trial for predicting the fall of the galactic capital world Trantor, the Empire's sinister agents ferret out the conspiracy of these legendary creatures called robots. They exploit a new breed of human called mentalics, or telepaths who specialize in persuasion, to sniff out the opposition. And some of the robots are mentalics, and some are recruiting human mentalics to help push forward the Seldon Plan. There's more. Two disembodied AIs, Joan (as in Joan of Arc) and Voltaire, have infected robots of both factions like viruses. They've taken on the personae of their historical counterparts and behave as opposing avatars of faith and freedom. Voltaire took advantage of the radiation damage to Trema to give him free will; one or the other AI seems to present in most robots of either faction.

Along the way, though, Bear manages to entertain. Asimov was never prone to stage space battles or swordfights; Bear sticks to the spirit of the original, limiting the conflict to court intrigue, cloak-and-dagger, philosophical debate, and the occasional romance. His imperial characters — the dissolute Emperor and the attendant Machiavellian opportunists — are stereotypes, but he manages to create real sympathy for some of the other players. These include Klia Asgar, the mentalic finding a purpose in life, and Seldon himself, eager to shed the burden of humanity's future.

Daneel comes across flat as usual, but Bear puts other robots in genuinely touching situations. Among these are Plussix, the worn-out leader of the anti-Daneel faction who wishes in vain for the human approval he can never have, and Dors Venabili, who longs to serve Hari Seldon as his mate but needed to fake her death to serve Daneel's plans.

The book isn't meant to stand alone, and it doesn't, though Bear ties it up pretty well for the middle of a three-pack. He also gives us some of the wonderful SFnal bits he excels at: Telepathy experienced as taste sensations, for example, or ancient woodworks held together by preserving force fields. And he goes further than Asimov in suggesting the social and ethnic diversity of the imperial capital world of Trantor.

A larger problem lies not with Bear but with Asimov's legacy. Much as we love the Foundation books — some of us love them the way Ray Bradbury loves Buck Rogers —

the concepts are quite dated. Today it's hard to believe in a humans-only universe, a centralized galactic authority, or the lack of artificial intelligence in a culture as data-saturated as Trantor's.

Bear does a yeoman's job of trying to make all this credible, but every now and then the reader hits a reminder that this '90s writer is locked into the perspective of the '40s and '50s. Also, the wheels-within-wheels plotting and scheming was getting out of hand in Asimov's own books, so introducing still more secret societies does nothing to enhance credibility.

Where are those aliens, anyway? Asimov left them out deliberately because he felt he couldn't depict them, but I wonder if future authors will be able to resist the temptation. Will they also be able to stop themselves from tying in Asimov's stand-alone novels like *The End of Eternity* and *Nemesis*? Since Asimov's original trilogy took us less than halfway through the Seldon plan, and he left us hanging at the end of *Foundation and Earth*, what happens next? If this trilogy does well at the bookstores, we may not have to wait a thousand years to find out.

Thomas Marcinko

Moonwalk, by Ben Bova. Avon Eos Books, hardcover, 388 pages, \$23.00.

Ben Bova has been a prolific author of traditional Hard science fiction for nearly three decades. His novels typically chronicle the valiant efforts of far-sighted, protechnology heroes who are opposed by petty, power-hungry, short-sighted politicians and their narrow-minded supporters who embrace anti-technology views with religious fervor. Although he has seldom received significant critical notice within the SF field, Bova is a master at constructing traditional Hard-SF problem-solving plots, and the types of technologically competent heroes such stories require.

Bova's latest novel, *Moonwar*, fits firmly into this mold. It is a direct sequel to his 1986 novel, *Moonrise*, and is billed as the second book in Bova's *Moonbase Saga*. Both books involve the struggles to establish and maintain the first permanent base on the Moon.

Moonrise told the story of the establishment of Moonbase by Masterson Corporation, a project championed by Paul Stravenger and his wife Joanna Masterson Stravenger, who was previously married to the head of the Masterson Corporation. Paul and Joanna must overcome overwhelming forces which include rival corporations, a short-sighted world government, well-organized antinotechnology fanatics, and Joanna's son Greg Masterson, who believes Paul murdered his father, and then stole his mother to gain control of the corporation. *Moonrise* is compelling reading, as the Stravengers succeeded in maintaining the existence of Moonbase, but at the cost of Paul's life.

Moonwar begins seven years later. Paul's son Doug, whose life was saved in the first book only by the injection of nanotech machines into his body, has built Moonbase

into a successful nanotech manufacturing and research center housing two thousand people. Nanotechnology is banned on Earth, and Moonbase's primary export is diamond spacecraft built by nanotech machines. Moonbase is owned by a corporation in a small Pacific island nation which has not signed the UN nanotechnology treaty.

Georges Henri Faure, head of the United Nations, forces the island nation to sign the treaty, and immediately declares his intention to enforce the nanotechnology ban on Moonbase. When the Stravengers refuse (Moonbase cannot survive without nanotechnology), Faure suspends all commerce and communication with Moonbase and sends a squadron of heavily armed UN "Peacekeepers" to take over Moonbase by force. With the forces enroute, the Stravengers declare their independence from Earth, and petition for UN membership as a sovereign state.

Using only cleverness and a little nanotechnology, Moonbase repulses the first attack. Most of the novel involves Moonbase preparing for the inevitable arrival of a larger, better-equipped fighting force from Earth, as they slowly figure out the complex conspiracy between the amoral, power-hungry world leader, a powerful group of ruthless neo-Luddites who hate and fear nanotechnology with a religious fervor, a Japanese corporation that wants Moonbase and its nanotechnology, and various personal enemies of the Stravenger family. (Bova's antitechnology villains at first seemed hard to believe, but while reading this novel, President Clinton's State of the Union address urged a ban on human cloning research. Suddenly Bova's militant anti-science Luddites seemed more believable.) Our heroes at Moonbase come to realize that their only chance to survive and attain their freedom is to repulse the final attack of Moonbase without harming any of the massive military force, thereby gaining sympathy with the people of Earth.

In virtually every aspect, Ben Bova's *Moonbase Saga* is superior libertarian-slanted hard SF. So why did *Moonrise* receive almost no critical notice within the science fiction field, and why is *Moonwar* likely, in my opinion, to follow suit? Well, for one thing, Bova can be considered a little too predictable in terms of political agenda. Almost everyone in a Bova novel is working for either good or evil. People can change, but there is no gray. The two classes of people who are always evil are antitechnology fanatics and power-hungry political leaders. Bova's heroes are almost always pro-technology, technically competent, private-sector entrepreneurs. In the end, the hero may suffer great personal loss, but he always wins, and manages to keep his ethical and moral values intact.

Another factor may be that while a very exacting Hard SF writer, Bova has not been very innovative. Nothing in *Moonwar*, except for the nanotechnology, couldn't have been written in the '50s. Bova seems somewhat

Continued on page 34

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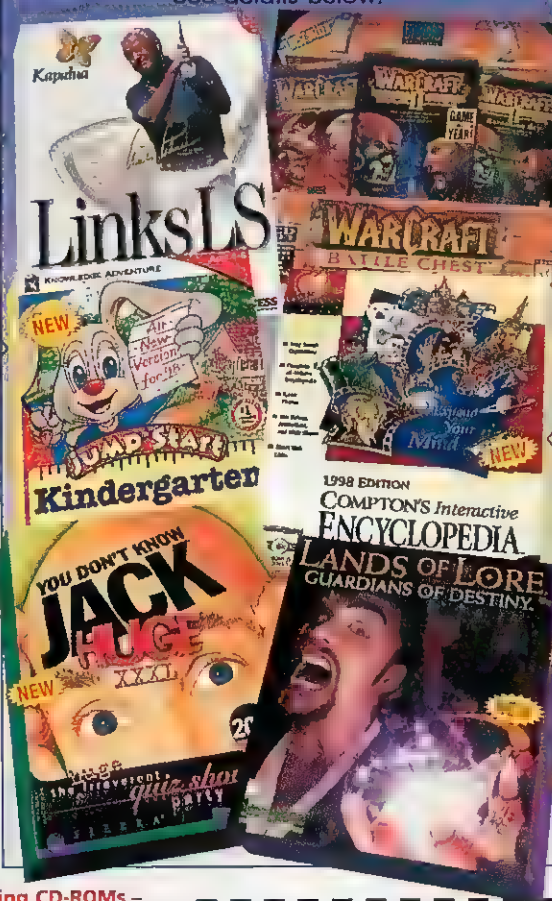
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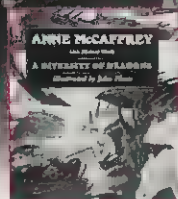
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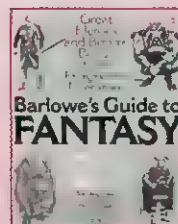
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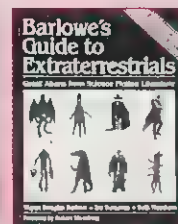
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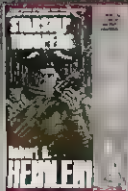
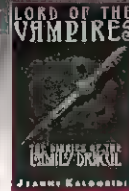
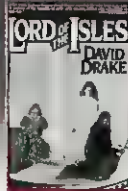
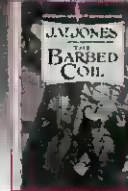
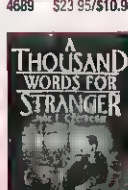
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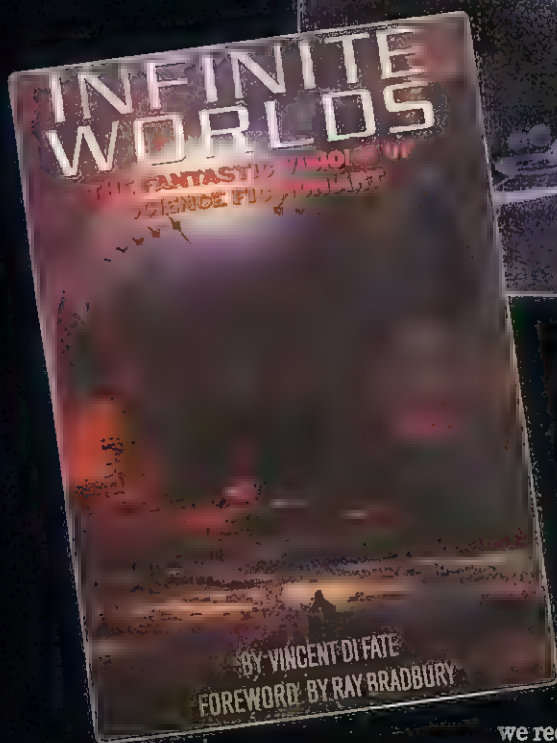
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fantastic DI FATE

The history of science fiction is as much the history of its artists as of its writers. The icons that identify the field—our rocket ships and bug-eyed monsters, our alien horizons and noble robots—are built as much out of oil paints and watercolors as they are of verbs and nouns. *Science Fiction Age* is proof of that; we've always believed that the power of the visual arts was as important as that of the written word. Vincent Di Fate, artist extraordinaire whose work

we recently profiled in these very pages, has assembled the ultimate proof, *Infinite*

Worlds: The Fantastic Visions of Science Fiction Art (Viking Press, hardcover, 330 pages, \$45.00), an immense volume that is a testament to the power of SF's master artists. This massive museum of the imagination overflows with hundreds of full color paintings by the classic creators such as Stanley Meltzoff (above), Alex Schomburg and Chesley K. Bonestell as well as the new masters such as Bob Eggleton, Michael Whelan and Don Matz. Di Fate, currently the president of the Society of Illustrators and a past president of the Association of Science Fiction/Fantasy Artists, has assembled a labor of love that is a celebration of the best the field has to offer. In a forward, Grandmaster Ray Bradbury states: "There are vitamins here, and minerals, and just plain roughage for the hungry mind." We agree. Enjoy the banquet.

GAMING

Deadly SPECIES

Only the strong survive, or so goes the saying, and there's no better place to learn that harsh lesson than in the *Aliens Predator Customizable Card Game*. In their string of hit films, these deadly visitors have left behind a body count higher than Freddy Krueger's. Now, thanks to Harper Prism, it's time for you to discover whether you're just one of the victims, or if you've got what it takes to be a survivor... or a destroyer, if you so choose. The game is available in three different

starter decks retailing for \$8.95. Depending on your inclinations, you can either play the role of Aliens, Predator, or the Colonial Marines. Each deck comes with 60 game cards, a strategy card for the competitor of your choice, one die, a token sheet, and a 64-page rule book.

Cards represent characters, locations, weaponry and all you need to play the deadliest game of all. Additional cards, suitable for play in whichever role you choose, are available in 15-card booster packs for \$2.95. Whether you decide to hunt prey (as Predator), breed and feed (Aliens) or defend humanity (Marines), you'll have your work cut out for you. Gaming is suitable for two, three or more players. For further information, check out <http://www.harperprism.com/ccg>.



AUDIO

Musical INVASION

There's only one good thing to be said about alien invasions—they sure do create good music! From Danny Elfman's zany B-movie parodies in *Mars Attacks* to Dmitri Tiomkin's creepy score for *The Thing From Another World*, visitors from other planets have always inspired the best from Earth's cinematic composers. *Alien Invasion: Space and Beyond II* from Silva Screen Records Ltd. brings these and 35 other classic SF tracks together for a two-CD set that will have you wishing for yet another otherworldly attack. Conductor Nic Raine leads the City of Prague Philharmonic Orchestra in 150 minutes of the finest alien invasion films of all time. Featuring themes and suites from *V*, *Predator*, *Independence Day*, *Invaders from Mars* and other powerful cinematic creations, *Alien Invasion* is brought to you by the same folks who created *The Cult Files*, another fine musical collection which we brought to your attention in a previous issue. For further information on this and other SF offerings, contact the manufacturer at www.silvascreen.com.



Parker ROLLS

What a strange long trip it's been! In 1975, the editor of this magazine worked at Marvel Comics where, among other things, he was the editor of the fan magazine *FOOM*. At the same time, an aspiring cartoonist named Charley Parker was publishing his cracked looks at superheroes with names like the Eggsman and the Mud-Thing in the same magazine. Turn forward the calendar two decades and Editor Edelman is getting nominated for Hugo awards for his SF magazines while Parker is winning countless Web awards for his delightful all-digital comic strip *Argon Zark*, which has finally been collected into book form by Arclight Publishing (full color trade paperback, \$6.95), for those don't have Internet capabilities. *Argon Zark's* adventures as he gets sucked into the World Wide Web are drawn entirely by computer and uploaded on the Internet at the artist's website at www.zark.com, where you should hurry now to find out about ordering the book and keeping up with the further adventures of the world's funniest supergeek.

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NEW ON VIDEO

Alien ATTACK

An invasion of big budget SF awaits your viewing pleasure on the home screen:

>Alien Resurrection: Sigourney Weaver returns as Ripley in the fourth *Alien* incarnation. Director Jean-Pierre Jeunet (*Delicatessen*, *City of Lost Children*) clones around with the classic series, having answered the magic question, "How do you bring back a dead hero?" The cast includes Winona Ryder, Dan Hedaya, Brad Dourif and Ron Perlman, who must defend Earth against the latest alien threat—a half-alien, half-human mutation called the Newborn.

>Mystery Science Theater 3000: Those misfits trapped making merry over the baddest of the bad sci-fi flicks are back again, this time taking aim on the outrageous output of B-movie maven Roger Corman. Join Joel Hodgson, Tom Servo and Crow as they skewer *The Gunslinger* and make mince meat out of *Manos: Hands of Fate*. Sarcasm has never sounded better!

>The Mummy: Dracula wasn't the only fearsome creature touched by the pen of Bram Stoker—only the most famous. Now, another of his classic tales, *The Jewel of the Seven Stars*, is brought to life, this time in a modernized version

starring Lou Gossett, Jr. Richard Karn (Home Improvement) and Eric Lutes (Caroline in the City) also star in this story of a long-dead Egyptian Queen who returns to possess the daughter of the archeologist who discovered her tomb.

>Flubber: Robin Williams steps in to fill the shoes of Fred Macmur-ray in this lively remake of Disney's classic *The Absent Minded Professor*. Joined by Will Wheaton and Sara Jean Reynolds, Williams must cope with his uncontrollable invention, "flying rubber," brought to life by FX supervisor Peter Crossman. Danny Elfman, composer for *Nightmare Before Christmas*, provides the score.

>1941: Slammed by critics at the time of its release, this director's cut of the all star comedic look at the Japanese invasion of Pearl Harbor and its effects on the war-crazed population of Los Angeles is worth seeing as one of the few times that Steven Spielberg laid an egg. Featuring John

Belushi, Dan Ackroyd, Toshiro Mifune, Christopher Lee, Treat Williams, John Candy, Ned Beatty and the proverbial cast of thousands.

>Shivers: David Cronenberg's classic 1974 feature film debut about parasites that take over a high rise apartment building and drive the inhabitants mad is back in this digitally remastered collectors edition. Included are the original theatrical trailers, a "making of" segment, and a current interview with writer/director Cronenberg as he talks about the film's creation. Featuring horror siren Barbara Steele.



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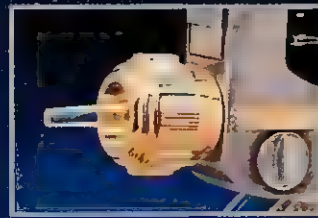
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TELEVISION

By Melissa Perenson

Our intrepid reporter beams back from L.A. with a tale of two *Star Treks*.



Robert Picardo (above, as the holographic doctor) and Kate Mulgrew (right, as the Captain) help bring to life *Star Trek: Voyager*, the third incarnation of SF's most famous franchise.

WALKING THROUGH PARAMOUNT Studio's labyrinthine lot, you know when you've crossed over into the fictitious, imaginative world of *Star Trek*. Extras outfitted in alien heads mill about, the unusual sight surprisingly less jarring than you might expect. After all, you are on the threshold of the 24th century.

Or, at least you are once you step into any of the six cavernous soundstages allotted to *Star Trek* between *Voyager* and *Deep Space Nine*. *Voyager*, which has permanent sets on stages 8 and 9—and uses stage 16 as well—is a prime example of the workmanship and attention to detail paid to bringing the 24th century to life. When the lights go up, and the screens and display panels come alive, it's easy to imagine that there's really a starship *Voyager* making its way home from the Delta Quadrant. The sets—including the bridge and mess hall on stage 8 and sickbay and engineering on stage 9—are solidly constructed and intricately detailed, right down to the complex computer-generated, video-

taped monitor images that play in the background. Evidence of the legendary *Trek* humor streak abounds, cleverly hidden in plain sight on countless signs and console labels, which are too tiny to be seen in on-screen: look no farther than one such small sign that proclaims, "Just sit right back and you'll hear a tale, a tale of a fateful trip, that started from a tropic port, aboard this tiny ship." There's an idea: *Voyager* is *Gilligan's Island* reincarnated.

On a mid-November Friday, it's barely 10 am, and the *Voyager* sets are coming alive. It's been a long week, and due to production running late the night before, the crew is just setting up. Stand-ins are on call, taking the place of actors Jeri Ryan (the enigmatic former Borg Seven of Nine) and Robert Picardo (*Voyager*'s resident holographic doctor), while director Jesus Trevino and director of photography Marvin Rush set up the lighting and camera angles for the shot. Ryan and Picardo arrive on the set by 11, their first rehearsal a half-hour later. Trevino watches knowingly from the hallway, just outside sickbay's doors, listening to the dialogue carefully using headphones and a radio wave mobile receiver unit, and watching the action in sickbay on a 13-inch Trinitron monitor.

Taking a break between shots, Picardo steps into the hall. "This particular episode is about two issues," he begins. "The first is a recovered memory story. It's become common in the past few years where an adult will, in therapy, uncover a childhood memory of some

sort of abuse. The question that raises is whether that recovered memory is authentic and believable or whether it can be something that's created in an artifact as the process of psychotherapy. The other issue is that of advocacy. And I play the advocate of the supposedly abused character of Seven of Nine. Although this is not a distant memory, it's a recent memory that I believe has been artificially, chemically blocked so that she does not realize how she has been violated by this



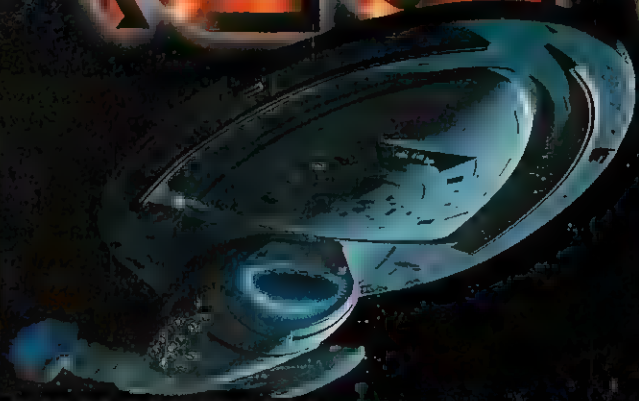
arms dealer character who wants to take advantage of her Borg nanoprobes to develop a weapon." The story, he adds, is about the process of how, though "the intentions of those investigating might start out to be impartial, you can get off the track."

"This is the first time that Seven of Nine has experienced any remorse, or anything like that," offers Ryan, herself taking a brief break while enjoying the sunny interlude in the midst of El Niño's recent wrath. "It's another step in Seven's discovery of humanity. And she's not enjoying it

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ABOVE: The latest version of the Enterprise, the greatest ship in the galaxy. BELOW LEFT: Jeri Ryan was brought aboard at the start of the newest season of *Voyager* to portray the Borg Seven of Nine. BELOW RIGHT: Colm Meaney has appeared on more than one *Trek*.

all that much. This episode is where she has her first feelings of real anger, so she's having an interesting time of it. That's what was going on in this scene this morning."

As filming resumes, Lisa Klink — *Voyager*'s story editor—and author of this script, titled "Retrospect"—comes onto the set, observing the work-in-progress from the sidelines. "This is the fun part," says Klink. "I'm done working and everyone else can work on my episode instead. This episode went through a lot of rewrites before production, but once we started shooting it, we have been down to little nitpicky kind of things."

Klink steps away for a moment, answering a question from Picardo before returning to the corridor, where various crew mull about. "The doctor is healing a patient in this scene and he wanted to say something when he was done to indicate he was done, like 'There' or 'Good as new,'" she explains. "Usually, if the writer doesn't happen to be here [on set] they'll just call us and say, 'I'd like to change this,' or 'I'd like to add this.' They're very good about not changing anything without asking us. We prefer it that way. So I think that's what he's going to say."

For Klink, it's gratifying to see her words

come to life in front of her eyes. "Definitely. Especially something like this. Bob Picardo is so funny that you may write things like, 'It's a miracle that you survived,' and although it doesn't read that funny, the way he puts it is funny. He always finds a way to inject even more humor into the lines. That's always a lot of fun to watch."

By 1 pm, actress Kate Mulgrew—who's still clad in her very late-20th-century-styled casual jeans and sweater—joins Ryan and Picardo as the production moves on to another scene. As they rehearse, Mulgrew and Picardo do an actor's tango, trying to coordinate their movements and marks so that they feel comfortable. After a few moments, Mulgrew and Picardo switch places. "I get very involved in that," says Mulgrew of the staging process, "in every scene I do. Depending on the director, it can be a wonderful thing, or a very annoying thing. Today it worked. And Bob is wonderfully inventive, too. So when I'm acting with him, it's a mutual admiration society."

"It's been a sleeper of a script, in retrospect," continues Mulgrew. "It came to life suddenly and unexpectedly for me. [This story] is the classic *Star Trek* moral dilemma. The doctor facing how he feels about these

additions to his program, which he is capable of making, which we have given him the liberty to make. He is now the ship counselor. And he counsels Seven wrongly. As a result, someone loses his life. Originally it was about Seven, and they wisely corrected it to make it about the doctor, which made it much more interesting."

Because of their late start, the cast and crew break for lunch at about 4 pm. But filming will go well into the evening, until the day's scenes

are completed.

Across the way from the *Voyager* sets are stages 18, 17, and 4. On this day in early December, the *Voyager* stages are dark, with the production filming on location for the three days on Universal's backlot. Meanwhile, on stage 17, filming is under way on a two-part *Deep Space Nine* episode titled, "Honor Among Thieves."

Written by co-supervising producer Rene Echevarria, based on a story written by production assistant Phil Kemp, "Honor Among Thieves" is an O'Brien-centric saga. "I think there's one scene that he's not in. Otherwise he's in every other scene," laughs Steve Oster, also a co-supervising producer. "O'Brien goes on an undercover operation and ends up befriending one of the members of the syndicate as a means of getting information about what they're doing," he continues. "In the end, [the contact] has to face the moral dilemma of having to turn the guy in and essentially risk being killed by the syndicate because he's allowed a mole in. So it's about O'Brien's angst at having to go through that process. [Filming today] is essentially the scene where O'Brien first works his way into the Orion syndicate. He's boobytrapped the computer interface so he can later come to their assistance to offer to fix it as a way of befriending them."

"I infiltrate the organization, and find out who and how they killed our operative," further elaborates Colm Meaney, who's appeared on *Star Trek* for over a decade. "I also find out that the Dominion wants to use this particular syndicate in order to assassinate the Klingon leader and create havoc and tension among the Klingon people. I discover that and report that back to Starfleet. And I also have a slight dilemma in that not being an intelligence operative I get kind of close to the people I'm actually informing on."

Being able to take his character out of the usual confines of Starfleet and the station is a

Continued on page 96



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SCIENCE FICTION IS "ABOUT" SCIENCE — BUT IS IT really? How much influence has real science had on science fiction — and how much has science fiction had on science? When *Science Fiction Age* wanted to know about science and science fiction, who else to ask but the most famous hard-science SF writers of our time, Larry Niven and Jerry Pournelle?

To SF readers, Niven and Pournelle need no introduction. Together or separately, they produce some of the best hard-science literature in our field. In addition to writing SF, Dr. Pournelle is a science writer, computer pundit, and a columnist for *Byte* magazine. He worked on human factors for the early space program. Niven has a degree in mathematics, and is a full-time SF writer. Their best-selling collaboration, *Lucifer's Hammer* (to be re-issued this year), set a new standard for SF thrillers. Together, they are hard at work on their next collaborative novel, *The Burning City*. Working separately, Pournelle's newest novel *Starswarm* is due to be released from Tor this year, and Niven's recent book, *Destiny's Road*, came out in 1997 to great critical acclaim.

Our overworked scientist/writer Geoffrey A. Landis was in Pasadena for a Pathfinder Project Science Group meeting, so we sent him off to interview Niven and Pournelle in their California habitat. He caught up with them at a meeting of the Los Angeles Science Fiction Society, and

from there they returned to Pournelle's home, the infamous "Chaos Manor," where Dr. Landis turned on his tape recorder and let them speak.

LANDIS: Is real science eclipsing science fiction, or does science fiction evolve right along with science?

NIVEN: Real science opens windows for us to look through. We don't run ahead of the scientists, and no, they're not always catching up to us, because what we do is follow along behind them just as fast as possible. We're right at the footsteps of the most interesting scientists around. And because they're scientists they have to watch their feet very carefully — two big mistakes, and their reputations are ruined. We can make mistakes — we've got no problem there. They're watching their feet, and seeing what's just ahead of them,

and we're looking over their shoulders at the mountains, seeing just as far as we can. That's the way it is with us and scientists, and there's no way they can ever catch up to us, because we're dogging their footsteps.

LANDIS: What do you have your eyes on right now?

NIVEN: I've been following astrophysics. The discoveries are coming thick and fast, but they all seem to deal with realms that most of my characters can't get to. By the time I can take people out to where Hubble is looking, they won't be human anymore, by a long way.

POURNELLE: I tend to try to stay fairly near-term. The big stuff right now is in computers. Let me give you an example: That machine you're looking at right there, that is a dual-Pentium Compaq. Given the graphics board built into it, that machine is more powerful than the Cray XMP with which they set up the National Supercomputer Center in Champaign-Urbana. We have supercomputers to play with. Nobody predicted that was going to happen, even in '84, except maybe me. I said in 1979 that by the year 2000 anybody in Western civilization who seriously wants to, will be able to get the answer to any question that has an answer. I really see no reason to revise that statement. That's pretty serious. I mean, the answer to any question, like, How do I make soman, and other war gases? How do I make nitroglycerine?

NIVEN: It is no longer possible to keep an interesting

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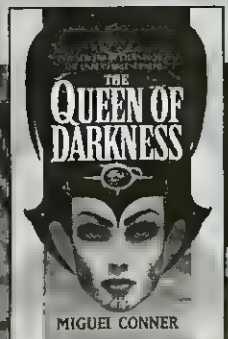
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secret. The only real way to maintain privacy is to be uninteresting. It may be that privacy is a passing fad.

POURNELLE: Right now the bandwidth problem stops about a hundred feet from me. Other than that last hundred feet, I could be connected to the thousand channels of television with no trouble at all, right to the desktop. Well, it's not going to be long before we get that last hundred feet. Fiber is cheap. In the next few years offices all over the world are going to be connected up at enormous bandwidth. Communications are just not going to be a problem, except places where governments interfere with it. And governments won't be able to do that for very long. I said some time ago that the Soviet Union was doomed the instant that they introduced small computers, even though they had no choice, because they were also doomed if they didn't. And, you know, it happened. It's almost impossible to keep track of what's going on, nobody can. I'm closer than anybody else in some respects in trying to keep track of the broad things going on in the computer world, and I can't keep up with it. It's sort of incredible.

LANDIS: Is there any place in science fiction for the old classic space travel stories?

POURNELLE: I think I'm making a pretty good living at that old-fashioned space travel story. Technically, these stories are fantasy, because I have faster-than-light drives.

NIVEN: I can do a good slower-than-light story. It's just that the details pile up, and so the nature of the story changes. Clarke made an insight, 30-odd years ago, in a short story; he said that starships won't be like the old sailing ships, because men are too expensive to launch. They won't launch any dummies. We're all going to be geniuses aboard those ships. It changes the nature of the conversation, the nature of the insights, the behavior, the recreation, the way they work.

POURNELLE: In *Legacy of Heorot* and its sequel we used slower-than-light travel. The communications are what we can project we'd have a hundred and some years from now, the computer technology is about what you would expect, and so on. There certainly is a place for the space travel novel; you just have to be more careful about it.

LANDIS: What else is different now, because of what we've learned?

NIVEN: We've learned how expensive it's going to be. We've learned how important every step is. You have the impulse, as a writer, to race toward the ending, to race toward getting your characters where you want them to be for the story to take place. We have become aware of just how difficult that is.

POURNELLE: Science and science fiction, how do you even distinguish the two? We've put our other hats on, and we've had some fair amount of influence over space policy and the space program. In August, up at Larry Niven's house, some 50 rocket scientists and the administrator of NASA met for a weekend. I was the chairman of the meeting and

we basically worked on space flight. SDI [the Strategic Defense Initiative missile defense program] happened because of meetings held at Larry's house. Those meetings have had Poul Anderson, Greg Bear, Dean Ing, Steve Barnes, Gregory Benford — all science fiction writers. Heinlein was at these earlier meetings too.

NIVEN: Arthur Clarke popped in for several hours.

POURNELLE: He did not agree with what we were doing. Still, he may be the nicest guy in the world. So in some respects it's hard to distinguish between science and science fiction.

NIVEN: Everything starts as somebody's daydream. And, when you're daydreaming, it is science fiction. It's when you start to work out how you put it together that true science fiction becomes real science. I listened to Robert Forward. He was hiking, and he looked at a big boulder, and he thought, if that rock could wiggle, I could build a detector to catch the gravity waves from it. He walked a little farther, and it's a big rock, and he looked back at it, and he thought, wait a minute, what if I wiggle the detector? And he went on, and built a gravity detector. The first time we ever met him, he was pretty proud of this thing, and it was still up for grabs. And it wound up in a short story I wrote called "The Hole Man."

POURNELLE: I can claim to have made some contributions to space science 30 years ago, but not recently. In those days I was running programs. In 1964, I was the general editor of a thing called Project 75, which was an attempt to predict what we would like to have for missiles in 1975. And to do what we wanted to do, required on-board computers. You can't guide a ballistic missile from outside, because any signal you can send it is subject to security problems. All you have to do is send it one bad signal and it's way off course. So we basically came up with a requirement for an on-board computer for guidance. Well, they went out and built it. And somebody said, Gee, that thing would make a very good general-purpose computer; and then somebody else said, Golly, I could sell a kit; and the next thing you know, the whole blasted computer revolution came out of it. So you could make the case that my colleagues and I at The Aerospace Corporation were the unwitting inventors of the whole bloody computer revolution.

NIVEN: I thought I had come up with something real once upon a time. In the story "Neutron Star," I have a star going behind the neutron star. The neutron star is too small to see, but it is a gravity source. The star going behind it becomes a ring, just for a moment.

LANDIS: An Einstein ring.

NIVEN: I wanted to call it a "Niven Ring." I didn't realize Einstein had thought of it first.

POURNELLE: Medical science is doing crazy things. In my stories, military hospitals have what I call regeneration stimulators. There's a piece in the current *Science News* about the new interest in regeneration. If a

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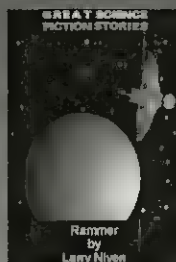
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salamander can grow a new leg, why can't we? We've about done the DNA sequence on people. Imagine a world, not very long from now, when that machine right there on that desktop can sequence the DNA for mutated anthrax. And then I just connect it to something that makes an organic molecule. It's going to be interesting times. Imagine that crazy guy in Japan, who was trying to blow poison gas around in the subways in Japan, if he'd had something like that?

NIVEN: Another reason why privacy could be just a passing fad, terrorism is going to get too good. Privacy hasn't been around that long anyway, in the matter of keeping interesting secrets. The kings of medieval England and France didn't have privacy. They dared not. Made them too good a target.

POURNELLE: No man is a hero to his valet, but everybody has a valet now. And the valet's got the Internet.

NIVEN: The machines pass on information.

POURNELLE: Don't slip up once. Get drunk and make a pass at a 14-year-old girl, and you may be finished forever. How do you keep a secret?

NIVEN: You keep a secret by being uninteresting. Run for office, get a job as an actor, and you're doomed.

POURNELLE: And don't get anybody mad at you enough to dig that deep.

NIVEN: The result could be, nobody's got any secrets, and nobody tries to keep them. What you are is open on the face of it.

POURNELLE: At least, what you are whenever anybody can see you. They can't see through walls yet.

NIVEN: But they will.

POURNELLE: And don't get drunk on the Internet. I used to do that, used to get drunk and type messages and get in arguments with people, and I look at some of the stuff I wrote when I was doing that years ago and it's embarrassing as hell, and it's *still around*.

NIVEN: Anybody who gets into arguments with Jerry Pournelle on the Internet is probably the type who'd keep the record.

LANDIS: Some people, most notably Vernor Vinge, have predicted that scientific capabilities are growing so fast that within 50 years, *everything* will be possible.

NIVEN: He calls it the "singularity." Greg Bear asks audiences, "In 50 years, do you believe that people will be recognizably human?" He doesn't believe so. That 50 year thing is an outside guess. And they may be right. I don't think things are going to happen that fast. I believe in hysteresis. Sluggishness, the mass of events. It takes a while to change the direction of anything. For the sciences, the way to change science's perception of things is to wait until all the old farts have died off. That is the way we came to accept that continents drift. It isn't because anybody convinced the old guys; they died.

POURNELLE: I don't know whether we'll be recognizably human in 50 years. I think so. My guess is yes.

NIVEN: I can only tell you that I stay

within a thousand years. Beyond a thousand years from now humans are not quite recognizably human, and I have trouble finding characters. With "known space," the assumption was that humans had been bred for luck, and the lucky were spreading through the gene pool. But it doesn't take that. It only takes the perception that something's going to happen, that a lot of curves are going to go asymptotic. That's Vinge's claim. For a writer, it's: Where do you find your characters? Mind you, we can postpone the singularity if we assume a war.

POURNELLE: And we did. I mean, *Mote in God's Eye* assumed several wars, which is no bad assumption. "Peace is a condition we deduce from the fact that there have been intervals between wars." You expect wars, and you expect them to get worse and worse all the time, and that's kind of what we did in *Mote in God's Eye*. There have been cycles in history, always have been, why not now? It's hard to tell stories about critters that are not human. John W. Campbell tried it, in "Twilight," and everybody says it's a wonderful story, and nobody ever reads it twice.

NIVEN: Sure, I like writing books that people keep re-reading. But some stories do stick in your head through having been read once. The point is made, it sticks there, it guides your life. "The Cold Equations" was one of those. The point sticks in your head: Physics rules. Virtue does not triumph unless the physics allows it.

POURNELLE: The lesson I got from it is, don't plan your systems to be so stupid as to leave no room for wiggles. He had to construct that very carefully to make that result come out. Fuel was *enormously* expensive, and so we won't put even a 10 percent safety margin into the fuel for a rescue mission? Bull pucky.

LANDIS: Are there any stories in particular that really did get the science right?

POURNELLE: In what way? Heinlein got it right as far as he knew, for when he was writing. He was wrong in many details.

NIVEN: The flavor was always right.

POURNELLE: They were using slide rules on spaceships in his time. *Starman Jones* has some of the silliest assumptions about computers, but the only computers Heinlein had anything to do with were the old analog fire-control computers for battleships.

NIVEN: Science fiction has gotten more accurate as we've gotten closer to the present, because SF stories have not only attracted, but also generated, current scientists, and they got better at talking, and the writers got better at listening. The result is, the best science fiction writers around today are the equal of any one of the past. We're all standing on the shoulders of giants.

POURNELLE: Heinlein, in a sense, made it possible for us to be friends with Carl Sagan. In Heinlein's day, Poul Anderson couldn't go to a famous scientist and say, "I'm a science fiction writer, do you want to talk to me?" The scientists wouldn't pay any atten-

Continued on page 97

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uncomfortable dealing with nanotech concepts, which he abandons in the final defense of *Moonbase*. The characters, too, are essentially from 1950's SF, updated somewhat to include a more ethnic and gender diversity.

The most crucial factor, however, might be that Bova's novels, including the *Moonbase* Saga, just don't invoke sense of wonder to the same degree as the work of today's best Hard SF writers. Bova works on a smaller scale than writers such as Bear, Benford, Brin, and Robinson.

But what Bova *does* do—write clever, fast-paced stories with good and evil clearly defined, good guys who win despite all odds, and bad guys who get what they deserve—he does very well indeed. *Moonwar* is at its heart a hopeful novel that is sufficient to make one believe that, at least sometimes, nice guys do finish first.

—D. Douglas Fratz

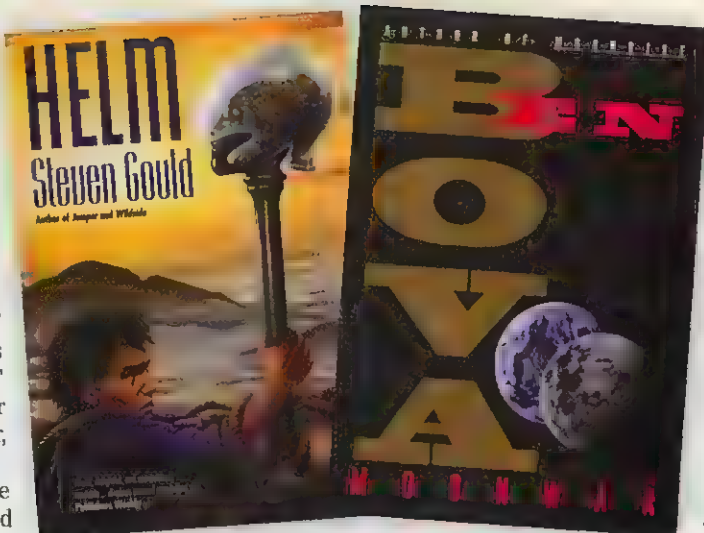
Helm, by Steven Gould. Tor, hardcover, 384 pages \$24.95.

Let's talk today about a well-meant SF curse. No, not Doc Smith's "By Klono's Brazen Balls!" I'm referring to a curse bestowed by critics intent on praising a writer. It happens every time a reviewer decides to label some hapless journeyman writer "the new Heinlein" (or "the new Asimov" or "the new Clarke" or "the new Bradbury").

What a kiss of death. How could any young or midlife writer possibly shoulder the enormous mythological burden of Robert Heinlein's entire career? RAH meant too much to too many of us. His mix of virtues and vices, born wholly of his era, will certainly never be exactly replicated in our changed world. The SF audience and marketplace and the cultural parameters of the late 20th century all conduce toward uniquely different manifestations of SF tale-telling. Even if Heinlein himself were cloned today, he probably wouldn't become the "new Heinlein."

And yet, and yet. The forces of tradition do exist. Spirits resonate across eras. Mantles are passed, and lineages established. So: there are some SF writers today who might be fairly called "Heinleinesque." These authors exhibit a mix of romanticism and cynicism, and a clear-eyed perception of how the world works. Their protagonists are ultra-competent men and women, their villains the bureaucratic adherents of inertia and greed and superstition. Their prose style is a slightly jazzier version of Heinlein's "transparent" medium, and the speculative stories they choose to tell could justifiably be called "adventures."

The two most prominent active figures I would place in this tradition are William Barton and John Barnes. Recently, on the basis of his first two books, a third author, Steven Gould, has been hailed as fit to join this roster.



And although Gould's latest offering, *Helm*, by Steven Gould actually departs from the Heinlein mold, it remains a potent work.

Gould (married to fellow SF writer Laura Mixon, with whom he has written *Greenwar*) debuted in 1992 with *Jumper*. The gripping tale of Davy Rice, a teenager with teleporta-

tion powers, this novel exhibited many strengths. Gould's honed writing plainly privileged concreteness, conciseness, speed, and transparency. Next up was *Wildside* (1996). Another teen protagonist, Charlie Newell, spoke to us in a voice mature and responsible, yet believably youthful. Charlie happened to be heir to an interdimensional gateway and possessed a visionary use for it.

Helm comes as an ambitious but slightly frustrating departure from the potent formula Gould followed in his first two novels. Although Gould's favored protagonist—an attractively naive, yet wise young adult—remains, the narration this time is omniscient, with frequent jumps in viewpoint. This tends to diffuse the kind of intense readerly identification Gould achieved before, and *Helm* is thus less of a gut-grabber. Additionally, by choosing an alien, slightly arbitrary future venue (*Jumper*

BOOKS TO WATCH FOR

Clones, edited by Jack Dann and Gardner Dozois (DAW). Welcome to Dollywood! Nine stories by writers who've decided to clone around with genetic manipulation, featuring Damon Knight, Joe Haldeman, John Varley, Ursula K. Le Guin and five other masters.

The Playboy Book of Science Fiction, edited by Alice Turner (Harper Prism). For decades, while others bought Playboy for those women with the staples in their navel, SF fans bought it for the fiction by Silverberg, Bloch, Bradbury and others. Now the best of their SF is collected in one volume.

Frankensteins and Foreign Devils, by Walter John Williams (NESFA Press). A collection of the best short stories by the author of the novels *Hardwired* and *Aristoi*, published to coincide with his appearance as Guest of Honor at Boskone, a Massachusetts SF convention that's one of the best in the country.

The Neutronium Alchemist, Part One, by Peter Hamilton (Warner Aspect). It takes two volumes to contain the sequel to Hamilton's epic *The Reality Dysfunction*. Volume one, *Consolidation*, is out this month, while *Conflict* will follow in two months.

Edgeworks 5, by Harlan Ellison (White Wolf). This omnibus edition gathers Ellison's essays on TV, originally published as *The Glass Teat* and *The Other Glass Teat*, in one hardcover volume for the first time. A controversial look at a vast wasteland.

Arthur C. Clarke and Lord Dunsany: A Correspondence, edited by Keith Allen Daniels (Amanesis Press). As strange as it may seem, the premier Hard SF titan and the grandmaster of fantasy kept in touch. Eavesdrop in on this intriguing discussion between two masters.

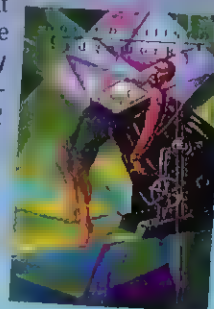
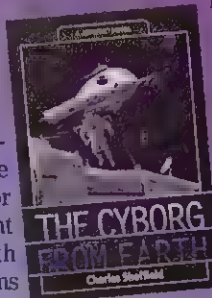
Thirty Strange Stories, by H. G. Wells (Carroll & Graf). The author of *The Time Machine*, *The Invisible Man*, and *The War of the Worlds* was a master of the fantastic short story as well. Follow editor Stephen Jones as he leads you through a side of H. G. Wells you might have overlooked.

Northern Dreamers: Conversations with Canadian Authors of Science Fiction, Fantasy and Horror, by Edo van Belkom (Quarry Press). Interviews with the likes of famed Northern writers such as William Gibson, Spider Robinson, Robert J. Sawyer, Phyllis Gotlieb, Robert Charles Wilson and many others.

The Mothers and Fathers Italian Association, by Thomas Monteleone (Borderlands Press). The Hunter Thompson of Horror collects the best of his essays on the field and its many foibles.

The Cyborg From Earth, by Charles Sheffield (Tor). A novel in the Jupiter series, which hopes to give today's readers the equivalent of Heinlein's famed juveniles.

By the author of *Higher Education*.



and *Wildside* took place in contemporary times), Gould undercuts that Heinlein-style sense of showing us the inner workings of our familiar world (even if that world should be displaced a few years from now).

Helm opens with an informative prologue: The Earth is uninhabitable and most of humanity is dead, killed in a war. A small community of survivors on the Moon strives to launch a terraforming mission, complete with hibernating human colonists, to a planet around Epsilon Eridani. After some violent arguments, the mission goes forward.

Three centuries pass. The altered planet Agatsu now supports life nicely. A low-tech human civilization flourishes. In the polity of Laal remains the last surviving Earth-derived "imprinter," a device that can reconfigure the human mind, imparting useful knowledge—or, if misused, unbreakable compulsions. Known as the Glass Helm, the device resides safely atop an unclimbable pinnacle.

Unclimbable, that is, until the youngest son of the ruling family, Leland de Laal, retrieves the *Helm* in an act reminiscent of fledgling Arthur pulling the sword from the stone. Donning the imprinter, Leland acquires a secondary personality, that of a long-dead woman from Earth. Now begins Leland's true education. Honed to self-sufficiency by a stern father (awkward father-son dynamics are a consistent theme in Gould's novels), mastering the art of aikido, Leland is unwittingly preparing himself for the turbulent period ahead, when the survival of his very nation and family will be in doubt.

Over the course of about a year, Leland matures, falls in love with the equally determined and feisty Marilyn de Noram, and is plunged into war. Only through his own skills and endurance and ingenuity will he painfully triumph. That his ultimate survival depends upon a neat twist involving the imprinter in no way diminishes his sacrifices.

The major use to which Gould puts his descriptive skills here—the same skills that allowed him earlier to convey so precisely the reality of teleportation and dimensional travel and field-stripping a plane's propeller—is the portrayal of aikido. The many martial arts scenes are thrillingly crystalline, as is the philosophy behind the moves. And the final hundred pages of this book, after the point at which Marilyn is kidnapped by Leland's rival, the sleazy Sylvan, is a remarkably sustained propulsive climax, replete with a dangerous climb that echoes the book's opener.

In the final analysis, the flavor of *Helm* is no Heinlein vintage that I recognize. Rather, it recalled to me a Poul Anderson or Gordon Dickson planetary romance. Shades of Keith Laumer and H. Beam Piper hovered in the background, and R.A. MacAvoy's *Lens of the World* trilogy seems a possible sympathetic cousin. To mention these other models, far from detracting from Gould's accomplishments, merely points up what a savvy writer he is, fully competent to wear SF's Glass Helm.

—Paul Di Filippo

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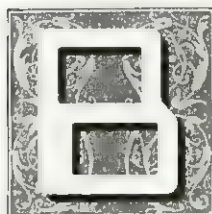
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Beppolus stepped outside of the factory for a breather. He paused, inhaled deeply, exhaled. The soft lemon-scented Mediterranean air of the region was a tonic to his weary senses. He grew younger each day just by breathing it in.

Cypress trees stood sentry along the boundaries of the fields and tawny hills. No, not sentries, he decided. Green and tapered candle flames, immobilized. The Dark Ages were heaven, if you happened to be in seventh-century Umbria. He scratched a louse bite under his rough knee-length tunic and told himself that he was a lucky man.

Another deep breath brought the tantalizing aroma of roasting meat. He thought of tonight's meal and his mouth flooded with saliva — Magdalena, his freed-woman housekeeper, had promised something special in honor of her youngest son winning an apprenticeship with Regazi the tanner. Magdalena, of the flashing eyes and swaying hips. Widowed too young, much too young.

Life was good here on the far outskirts of Ravenna. Golden light sat softly upon the hillsides, gleamed on stone walls left by the vanished Romans. The Emperor Heraclius — nominal ruler of the region — was far away in Constantinople and about to engage in a prolonged war to the east with the Persians. The Pope was minding God's business down in Rome, the neighboring Lombards were quiet and sleepy, still digesting their portion of Italy, and the nearest imperial representative, the prefect, was miles away on the Adriatic Coast. Meanwhile, Beppolus had a fine dinner to look forward to. And later, perhaps, he would tiptoe down to Magdalena's bed...

He stepped back into the fragrant barn where a dozen stout townspeople were assembling the delicate fabric petals that would be stitched into kosodes and shipped uptime. He admired the deftness of their fingers racing over the hidden circuitry. Of course, they thought they were doing fancy embroidery for a Byzantine lord's betrothal. Let them. God bless them for their illiterate unthinking simplicity.

He started to whistle, caught himself, stopped. Have to watch that,

he thought. No Mozart allowed. Not yet, anyway.

Cavalonus, the factory chief and Beppolus's superior, a dour, sharp-featured man, gave him the high sign and Beppolus moved into the shadows behind a pile of baled fabric where they could converse unobserved. He offered his boss a fragrant bay leaf to chew but Cavalonus waved it away. His sour features were grim and set, the shadows in his eyes fathomless.

"I just got the new downlink from headquarters," Cavalonus said. "Be ready by next Monday."

"Monday? For what?"

"We're closing down. Getting out of here."

Beppolus felt the floor drop out from under his leather-wrapped feet. He was falling, falling fast, with not a wisp of net beneath him. "Why?"

"Cash flow and productivity. We're not cost-effective."

"That's bullshit, complete and utter bullshit. They're not giving us a chance." Beppolus groped desperately for argument. "We've barely been here a year. Besides, I thought the fibers from these particular sheep at this particular time were especially pure."

Cavalonus shrugged. "Management says they're getting better results from De Beers and his crew in the 13th. My guess is, we'll be rephased and join them."

Beppolus's eyes smarted and his throat grew tight. Leave seventh-century Italy for 13th-century Holland? Horrifying. Unthinkable. Get another personality overlay? Become some pale, tight-lipped Dutchman who would shiver through the sleet and rain of that benighted land and eat gruel in the candlelit darkness? Beg some mingy, toothless Dutchwoman with hardly any flesh on her bones to share his bed as he waited for the plague to arrive?

No. Never. He liked when and who he was now much better than

BY KAREN HABER
ILLUSTRATION BY JOHN SNYDER

who he had been uptime in 2177 — or whomever he might yet become. Beppolinus could dimly remember his real-time persona, of course, but it lingered in the shadows of his memory, a vague quiescent shadow: Ivan Keller, age 32, general manager for Kemo Sabe Skeinworks, manufacturers of kosodes for personal climate control and all personal environmental/lifestyle needs.

He had been a middle manager, a number-cruncher, and productivity analyst, staring all day at a holoscreen, spending his nights in a simbar singing to projected phantoms, breathing canned air, eating colorless hydroponic food, sleeping in his cramped crib on KSS's Orb-fac Number Five somewhere high above Nuevo Rio. Ivan Keller, who, reclassified and rephased, had closed his eyes one night in the early 23rd century and awakened, reborn, as Beppolinus, lusty, bearded, dark-eyed, sniffing the intoxicating aromas of Umbria circa 615 A.D., free to ramble through the golden hills, bed the lusty local wenches, eat the Earth-grown food, and live in the Sun as a natural man was meant to do.

Stay asleep, Ivan, he thought. Sleep real long and real hard, *cugino*.

At the end of the 22nd century a marvelous discovery had been made: If you went back far enough in time and were careful about what *in situ* resources you used, there were no adversarial effects upon the timeline. In other words, it didn't matter. You could use the pure unpolluted wool of 2,000 sheep in seventh-century Umbria to spin kosodes for Martian colonists in 2213 and not one second of the timeline would be displaced or deformed. Needless to say, corporate out-sourcing took on a literal new dimension as efficient utilization of the past's resources became a priority with every vice president in charge of production and development in every corporate city-state.

Suddenly his real-time self stirred in his mind. *Productivity*, Ivan murmured. The sacred mantra of KSS. *Bring those numbers up and we'll never have to leave.*

Yes, Beppolinus thought. *Si, si, si*. Productivity was the key. But first, he had to win over Cavalonus. How to reach him? The weather? No. Cavalonus didn't give a damn if it was raining or sunny. The food, then? No, Cavalonus wasn't particular. The women? Ditto.

For the first time since he had arrived, Beppolinus longed for a comlink and a brief look — just a peek — at Cavalonus's real-time Psydex, his likes and dislikes. But he might as well wish for wine to run through the canals of the future Venice.

I'll have to improvise, Beppolinus thought. Stir everybody up and get 'em moving. It was only *Martedì* — Tuesday. He had nearly a week.

But of course there were problems. Swart and swarthy Nicodemus, whose nimble fingers were especially well suited to the task of separating woolen fibers, would have been delighted to work double-shift, *signore*, but his arm was *malamente* after carrying the Madonna in last month's pilgrimage and he needed rest to heal it.

“SORRY,
BUDDY,
BUT IT WAS
ME OR YOU,”
BEPPOLINUS
SAID TO THE
PLACE WHERE
CAVALONUS
HAD BEEN.

And fat Michaela's mother was doing poorly just now: Her legs wouldn't hold her upright. Perhaps she could work *Mercoledì* next. And Michaela's cousin Sophia had just given birth to twins but promised she would be in just as soon as she found a wet nurse. Of the remaining work crew, two were pregnant, three were drunk, and one, Grosso Paulus, was just in a bad mood.

Merda! Beppolinus thought. Where does that leave me? By the Zeider Zee.

Cavalonus gave him a cold glance. “You'd better hustle, *stronzo*, or you won't be ready. And don't expect me to pack your load, too. Let KSS dock your pay.”

In reply Beppolinus made a *figa* but Cavalonus just laughed at the rude gesture and walked away.

Fuming, he passed Brother Theodorus, one of the monks at the nearby monastery. The brother gave him a brief beatific smile and passed along, his brown habit dragging on the grass. Beppolinus momentarily envied him his simple faith.

He went in search of Magdalena, and discovered, to his chagrin, that Magdalena's mother would be arriving that very night, taking up the rest of the space in her daughter's bed. He spent the evening by the fire, drinking the local honey wine. After he had drained the second of two wineskins, he sauntered outside to relieve the pressure on his bladder. Afterward, feeling marginally better, he came around a patch of thorny bush behind the barn and nearly staggered into Cavalonus. Cavalonus the company man, packing kosodes into pallets. Didn't he ever sleep? Eat? Screw?

“Well,” Beppolinus said, “aren't you a good boy. Trying to get overtime and a half?”

Cavalonus scarcely paused to look up. “Somebody's got to do the work.”

“Up yours. I'm not going to Holland.”

That got a reaction. Cavalonus put down a garment and stared at him as though he were barely human. “Are you nuts? KSS didn't give you a choice.”

“I'm not going,” Beppolinus said.

“Why?”

“Why? Look around. Don't you see how beautiful it is here? The food, the air? How can you not want to stay?”

“Seventh century, thirteenth.” Cavalonus shrugged and began folding kosodes again. “Makes no difference. It's just another outsource facility.”

The man was an insensitive imbecile. With exaggerated slowness, Beppolinus said, “Maybe you just haven't given it a chance. Stay here. Together we can make this place work.”

“The company doesn't pay me to like or dislike. It pays me to do what it says. And KSS says we're moving.”

Beppolinus folded his arms across his chest. “Not me.”

“Don't be a sap. They'll use your transponder to snatch you back so fast you won't have time to blink.”

“That's bullshit. They can't do that and you know it. I have to be in the right coordinates.”

“And if you're not, who'll catch hell? Me.” Cavalonus's jaw jutted out and his eyes glittered ominously. “You'll be there if I have to tie you up and carry you. *Capisce?*”

Beppolinus stared at the larger man and realized that he was temporarily beaten. His spirits fell. But once again his real-time consciousness came to his rescue.

KSS production manual, quoted Ivan. *Chapter Eight: Achieving Affirmation Through Subtlety. Avoid conflict. Circumvent obstacles. Subtlety. Circumvent. Right.* He couldn't outtalk Cavalonus. But he could go around him.

Beppolinus made a great show of slumping his shoulders and kicking at clods of dirt. Finally, sighing frequently, he fell to work, packing kosodes.

Cavalonus gave him an impatient look. “You'll feel much better once you've been rephased.”

“Maybe you're right.” Outwardly he radiated defeat. Inside, he was aflame with his plan. He waited until Cavalonus quit for the night, then followed him — at a safe distance — to his quarters. Squatting in the shadows, scarcely breathing, he waited.

The Moon rose higher in the sky and the wind set the trees to whispering. When Beppolus heard Cavalonus' deep steady snores, he crept into his room. Moonlight poured through the open square in the wall that served as a window. It was easy to find the equipment. A moment later, Beppolus had reprogrammed Cavalonus' transponder, scrambling the local coordinates and setting new ones — to the Gobi Desert.

There was a brief musical chord. The air filled with shimmering light. Abruptly the snores stopped. Cavalonus was gone. All that was left was a Cavalonus-shaped depression in the hay.

"Sorry, buddy, but it was me or you," Beppolus said to the place where Cavalonus had been. He knew that his boss's chances of survival weren't good. He'd never be able to reset his transponder. Few KSS employees had the knack. Well, it was a *cane mangia cane* world. He crept back to his bunk and slept until sunrise.

Monday came and went, with nothing much to distinguish it from any other day save the glimmer of the translation device as it came alive at the shipment point. Beppolus saw the translation effect appear like mist in the sunlight, distorting his view of the rolling hills beyond. A moment later he watched it disappear, returning to the future without a single kosode, without Cavalonus or Beppolus trapped in its grasp. He was safe, temporarily. But he knew that a KSS snooper would be sent back to investigate.

She materialized almost instantly, although that was subjective: two weeks had probably gone by in real-time as concerned KSS flunkies flung numbers and productivity charts back and forth in growing panic.

She was tall, red-haired and long-legged, with deep blue eyes and a heart-shaped face. She wore an immaculate linen tunic and overskirt. Beppolus took an extended appreciative look at her and thought what assholes the KSS managers were to send somebody who looked like a Celtic princess back to Byzantine Italy. She couldn't have been more conspicuous if she'd been painted blue.

With a sharp authoritative gaze the redhead scanned her immediate vicinity, alighting on Beppolus. "Ah, there you are," she said in precise WorldEng. "Ivan Keller."

He replied in *rustica romana*. "My name's Beppolus here."

"Whatever. Where's your number one?"

"Who?"

"Felix —"

"You mean Cavalonus? Gee, I don't know. I haven't seen him in two days." He lowered his voice. "I think he owed the tavern-keeper some money. Gambling debts."

The redhead's lips tightened. "I see. Well, that accounts for the delay in reprocessing. I'll just make a note here for his personnel file and activate his transponder for instant recall." She tapped the handle of her own device smartly. "I'm Yael Agata. KSS has sent me to supervise the rephasing of this facility."

The blond hills, the green trees. And all that this woman could see was a facility. Beppolus forced himself to mumble, "Oh, thank goodness."

A few herdsmen had gathered around them, obviously drawn by the appearance of the tall, beautiful woman. They nudged one another and made ribald jokes in their rough dialect.

"We're attracting attention," Beppolus said. "Against regulations."

"Noted. If anyone asks, tell them that I'm your wife, newly arrived."

"Right." My wife, he thought. How was he going to explain this to Magdalena? His mind was whirling. "You'll want to see the loft — I mean, the facility, up-close."

"Yes. And then we'll have to make arrangements for my accommodations. Where are you staying?"



Magdalena slammed the heaping dishes onto the wooden table. Hot juices splattered in all directions. She was sulking but Beppolus knew that it couldn't be helped. He couldn't explain anything to her now.

Helplessly he sipped from the wineskin and offered his "wife" a fresh

one. Yael Agata seemed to enjoy the honey wine and managed a smile. It almost made her seem human.

Without a word, Magdalena slipped out the door. At first Beppolus assumed that it was for a bathroom break, but as time went on and she didn't return, he began to wonder what had become of her. It wasn't like Magdalena to go out after dark. He murmured an excuse to Yael and went outside to look for her.

"Magdalena?"

She was nowhere to be seen. He widened his search from the area around the house to the loft, then behind it. "Magdalena?"

Beppolus saw an odd glow off to the left behind a stand of cypresses. As he got closer to it he heard deep chanting, and saw a circle of townsfolk, intent upon what seemed to be a fire.

Pagan rites? He searched his memory implant. It wasn't impossible. Even this close to Rome, certain pagan beliefs and practices had persisted until the 10th century. For example, squawking crow that circled left foretold a happy journey. Study of a horse's excrement could foretell whether a day would be good or bad. Gradually, he knew, the pagan would phase out as Christianity gained its stranglehold on the population.

Beppolus's eyes widened. Wasn't that Brother Theodorus he saw, there among the chanters? Then this couldn't possibly be a pagan rite. Perhaps it had something to do with early Christianity. Beppolus shrugged and stepped back slowly until several thick bushes had come between him and the scene. He knew better than to intrude on religious matters. Bemused, he crept back to the house.

Yael had finished a full wineskin. He offered her another and she didn't refuse.

While she was occupied with it he stepped into the shadows of his sleeping loft, where he had stowed her travel gear, and rummaged through her things. No sign of any transponder. Damn, he thought. It must still be on her.

His palm brushed his personal diagnostics kit and he felt the sudden prick of a needle. The damned thing was checking his blood. The system worked very slowly ever since he had accidentally dropped a horseshoe on it and cracked its casing. It hummed quietly. After five minutes it told him that he was drunk and in danger of dehydration. He ignored it.

Stumbling back out to the hearthside, he settled heavily beside Yael. She was so pretty, he thought. Surely there lurked a heart beneath that smooth, perfect hide. Yes, a heart and a soul. He would work on that, convince her that the seventh century was the paradise he knew it to be. She would come around.

And thinking such thoughts, he drifted to sleep, awakening hours later to find the fire out and his body cramped from the odd position he had slept in.

Magdalena was gone. He made his breakfast from a hard rind of cheese and a heel of bread. Yael, too, was nowhere to be seen. The sun was already rising when Beppolus entered the work loft and found the KSS inspector muttering over the kosodes.

"Only 70 bales?" she said. "No wonder they're reassigning you."

He ignored the tone and concentrated on the vision he had had last night. Yael's heart, her soul. He appealed to those. "Perhaps it's the place itself."

"Pardon me?"

"The place. The Sun. The perfume of flowers on the air."

"I'm afraid I'm not following you."

"You tasted the wine last night. Isn't Italy wonderful? Beautiful. Rich."

"I'm sure it's very nice."

"Paradise. Wait until you taste the food tonight."

She was staring at him with an unmistakably impatient glint in her eye. "What's your point?"

"That you should reconsider. KSS is missing a major opportunity here."

"Now wait just a minute —"

Beppolus grabbed her hand. "See? I'm flesh and blood. So are you. Real people. And this is a real place, not some virden

or stimbar. It's the way people were meant to live. In the sun and the wind."

With a sharp motion she broke his hold on her and left him with his hand stinging. "That's an infraction of company policy. I'll overlook it this time. But I suggest you start concentrating on leaving." "I'm not leaving."

Yael Agata stared at him. She fumbled a moment at her belt and a patch opened, revealing a medipak and her transponder. "You need a tranquilizer."

Beppolus sighed. She was beautiful, yes, but her heart was cold and her soul belonged to KSS.

"Oh, look at that!" he cried, pointing toward the door. As, startled, she turned away, he leaned over and twisted her transponder. Where to send her? he wondered momentarily. Well, Cavalonus deserved company, especially someone who felt the same way that he did about the company. With a nod and a wink Beppolus sent Yael Agata whistling off to the Gobi Desert, her return coordinates scrambled. Perhaps she and Cavalonus could run productivity studies on the Silk Road — if they could find it.

He felt much better. Whistling tunelessly, he kicked aside a bundle of unfinished kosodes and went to look for Magdalena.



Later that day, Beppolus decided it was foolish to try and reason with the next HSS investigator — and there would be another. So he pulled aside Nicodemus and Magdalena and explained the situation.

"Cavalonus had to return to Rome," he said. "Family problems. And I'm expecting a visitor. Probably a man, although it could be a woman."

"Like the last one? Your wife?" Magdalena's smile was sharp, almost wolfish. She had obviously enjoyed making up with him. "Another wife?"

"No. Whoever it is will claim to be my friend. But he'll be lying. In fact, he'll try to kill me." His confidants looked at one another, shaken.

"Yes," Beppolus said. "Only you two can save my life. When my enemy comes looking for me, tell him that I'm gone, dead of a fever. Show him or her my grave if necessary. Meanwhile, I'll hide with the brothers at the monastery."

Nicodemus nodded eagerly. "Tell him that you're dead. Show him a grave. And then this enemy will leave?"

"Exactly." Beppolus didn't bother to add that the kosodes would leave as well. "You'll send word to the monastery when it's safe for me to return."

"Yes," Magdalena put in. "Otherwise you might decide to become a monk and stay." Her smile became sly and her dark eyes gleamed. "You wouldn't do well with only men."

He gave her a grin that was also a promise and sent her on her way. Nicodemus received a few coins to ensure his cooperation. Nodding in a reassuring manner, the smaller man trundled down the hillside, leaving Beppolus alone in the late sunshine.

Better play it safe and head for the monastery right now, he thought. Was that the twinkle of the translation device? He turned and rushed uphill into the cover of the trees, not bothering to look back.



The monastery grounds occupied barely two acres. Most of it was planted with vegetables and wheat. A few cows and hens were penned up next to the long wooden building where the brothers ate and slept.

A small stone chapel sat to the right of the living quarters.

Brother Theodorus was courteous but adamant. "I assume that

you're a Christian. But have you been baptized?"

As Beppolus hesitated the little round monk said, "I thought not." His round face gleamed with good humor. "You must be baptized before you can be allowed into the brotherhood."

"But I've already explained. I'm not applying for membership. I only want to stay for a few nights. It's a matter of protection."

"So you said. Friend Beppolus, you've done us many a good turn, been very generous with your support of our work here. Nevertheless, our rules stand."

Beppolus decided not to fight. "Fine. So baptize me. Whatever you wish. I'll honor your rules."

The brother smiled happily. "Excellent. Come along."

Beppolus followed the roly-poly monk into the chapel. Inside it was cool and there was a faint smell of water.

"You mustn't be afraid," Brother Theodorus said. "I'll be with you the entire time."

"Good." Let's just get this over with, shall we?

Beppolus found himself at the edge of a shallow octagonal pool filled with murky water. "You want me to get in there?"

"Of course. That's the whole idea." Brother Theodorus's helpful gesture turned into a shove and Beppolus found himself flailing in the cold water.

Brother Theodorus began to chant in Latin: "*In nomine patris*—" Beppolus gritted his teeth, preparing to tough out the silly ritual.

Suddenly a strange hum filled the room.

Brother Theodorus droned on, seemingly unaware.

A pale blue light illuminated the pool. Beppolus felt himself caught and held by some sort of force he didn't understand. Was this the Holy Spirit? Was he having an epiphany right here and now?

"—*Et filii, et spiritu sancto*—" Brother Theodorus droned on.

Beppolus couldn't move a muscle. And yet he felt tranquil and at ease. He loved this place. The monastery was a holy place that should never be disturbed, must be protected and defended—

Like a taut bow-string snapping, the light went out and the humming ceased.

Beppolus sat up in the bath, his eyes wide open. "Hey!"

Theodorus stopped chanting. His mouth opened in an "o" of surprise. "That's never happened before."

"What the hell's going on here?" said Beppolus.

Another monk, pale and hairless, appeared in the doorway, scuttled over, and began whispering in Brother Theodorus's ear.

Theodorus's eyes widened. His mouth gaped and he nodded several times. "That certainly would account for it. Thank you, Brother Sesterius."

The bald monk nodded back, smiled at Beppolus, and hurried away.

Brother Theodorus held out his hand. "Come," he said. "You might as well get out of that pool. Apparently it won't do you much good."

Beppolus felt completely confused. "Now wait just a minute. Am I baptized or aren't I?"

"You've apparently already been baptized."

Beppolus didn't bother to argue. "Then I can stay here?"

"I'd say that that's a foregone conclusion. Come, we'll get you a pallet and a blanket."

Beppolus spent a pleasurable fortnight with the monks, helping to tend their gardens, feeding their cattle, and mucking out the barn as the brothers made their hourly religious observances. Each night he fell onto his hard cot, thought brief, poignant thoughts about Magdalena, and passed into a deep, dreamless sleep. He awakened with the cock crow. When Nicodemus came to fetch him he was almost sorry. He had grown to like the earnest benign brothers.

"The stranger?" Beppolus said. "He's come?"

Nicodemus winked. "And gone. Oh, we put on a show, *signore*. We wept at the mention of your name. Magdalena weiled. We even showed him your grave — it was actually my uncle's."

"He went away?"

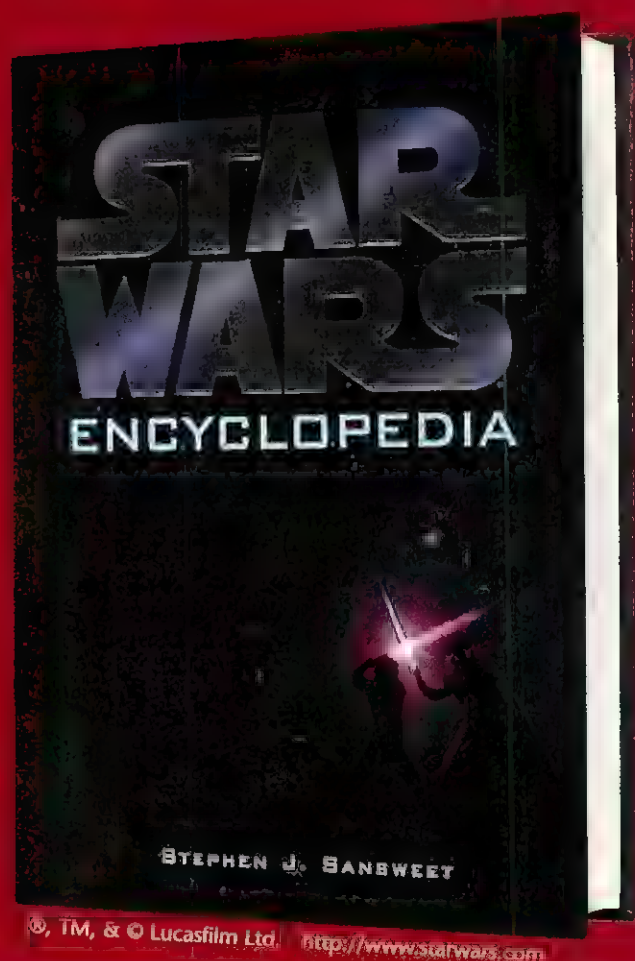
"In the night." Nicodemus frowned. "And all of the betrothal shirts are gone, too."

"Not to worry. As the Brothers have told me, the Lord works in mysterious ways."

"Come, *signore*. Magdalena is anxious for your return."

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Brother Theodorus sent him on his way with a pot of honey, some fresh cheese, and a blessing. "God smile upon you, Beppolinus."

With a cheerful wave, he set out for home. The Dark Ages weren't all that dark, he thought. Good cheese, sweet honey, and sweeter honey wine. No, not dark at all.



It was in the market in Ravenna that Beppolinus first noticed his urgent need to pee. It came on with a speed that would have been remarkable in itself if the physical discomfort had not been equally great.

Sidling over and away from the stalls of squalling piglets he staggered into the alley and let fly. The quantity of urine surprised him but he assumed it was the result of too much beer the previous evening.

Feeling much better, he sauntered through the square. Magdalena had asked him to purchase a new wooden bowl and a bolt of sturdy muslin from which she could sew a fresh mattress cover. He made the purchases and lingered in the shadow of the half-finished cathedral, enjoying the sights and sounds of the bustling market. Here, golden rondels of freshly made cheese glistened on a rough board. There, a sack of green Gaulish beans leaned tipsily against coils of stout brown rope. Toothless women with faces like sun-dried apples sang out the virtues of their wares, offering samples with a wink and a nod. The air was filled with the intermingled scents of musky perfume, horse manure, unwashed bodies, and fresh hay.

Before dawn that day Beppolinus had hitched up Brother Theodorus's oxcart and driven the monk over the dusty, rutted roads all the way to Ravenna. He had taken to doing odd jobs for the brothers in return for a portion of food from their garden, and considered it good trade, although his spine still tingled from the jolting of the cart.

Restless now, he wandered into the cathedral and watched the patient artisans toiling over the walls, fitting one tiny stone block after another into place as they created the mosaic murals that, centuries from now, would keep Ravenna on the world map. Stone by stone, art for the ages.

High up, near the lantern, Beppolinus could make out the stern visage of St. Peter and nearby the even sterner face of St. Paul, surrounded by gamboling sheep. He assumed that the terrifying Pantocrator was being saved for last.

Suddenly he felt the overwhelming urge to pee again. What was going on here? He barely made it outside the cathedral, sheltering behind a pile of uncut stone meant for mosaic work, ignoring the muttered curses of the stonemasons. Guild rules didn't prohibit peeing, did they?

He had just finished when Brother Theodorus found him. "Ah, Beppolinus," the monk said. "We should go back. There's not much daylight left."

With a rueful smile Beppolinus resigned himself to a sore ass.

A cracked wagon wheel slowed their progress. By the time Beppolinus had fixed it, the Sun was low in the sky. They were hardly even halfway home. As the Moon rose, Brother Theodorus suggested that they make camp for the night. "It's not safe to travel farther now."

Beppolinus settled the oxen and, using Magdalena's muslin, erected a crude tarpaulin off the end of the wagon. "I'll keep the first watch," he offered.

"No need," replied the monk. "No one will bother us."

"You sound fairly certain."

"Why should two servants of God be molested? Here, share my griddlecake and wine."

Beppolinus wanted to argue but his stomach made its own stronger argument. After the quick meal he felt surprisingly sleepy. His head nodded forward on his chest and he was unaware of the passage of time until he awoke in the predawn gloom. Brother Theodorus was snoring gently. But there was another sound, oddly familiar ... a low hum that reminded him of his abortive baptism. He struggled toward wakefulness, lost the battle, slept.

Beppolinus dreamed of Cavalonus and Yael Arata, walking through endless swirls of desert sand, comparing statistics. In the morning he forgot the ghostly phantoms of the night under the more immediate pressure of a bladder that felt like it would burst. Again he emptied it, marveling at the quantity of liquid. Not wanting to have an uncomfortable ride the rest of the way, he shrugged off the monk's offer of further food or drink. He would eat when he got home.

Magdalena welcomed him joyfully, clucking over their night on the road, and promised a huge meal for her hungry traveler.

Yes, Beppolinus thought, it was good to be back home, to sleep in a warm bed, to see the cypress trees in their frozen dance up the hillside.

But as the days passed he became more and more uneasy. He was tired, constantly thirsty, peeing like a horse, and his skin felt like ants were crawling over it. He dusted off his personal diagnostics and turned it on, pressed the rig against his wrist, and felt the prick of the tiny needle.

Five minutes later he stared at the result. Stared, in disbelief.

Diabetes.

Impossible. He'd been thoroughly checked. There was no history of it in his family. No reason to worry. It had been cured at the end of the 21st century. Vanished.

He tested himself again.

Diabetes.

How could it be? What metabolic switch in his body had malfunctioned? Was it the result of his rephrasing for this time period? He'd been inoculated against all the scourges of vanished times, against cancer and tetanus, rabies and plague. But diabetes?

No question now. He had to go back to realtime. He needed a retrofit on his Isle of Langerhans, pronto. Yes, KSS would surely bring him up on charges of desertion. Still, it was better than a slow death sentence here, perhaps losing his legs, or his eyesight. The possibilities were very unpleasant.

He searched for his transponder. Where had he put it? Ah, there, with the rest of his gear that he had never unpacked after his flight to the monastery. Beppolinus could almost imagine the startled expressions on the faces of the KSS Tech Room crew as he materialized in real-time. He unwrapped the transponder, glanced down at it, and gasped.

It was a ruin, its casing gone, its works smashed to smithereens. Useless. But it had been fine, he thought. Fine, until he had decided to hide out among the monks, taking all of his gear with him.

Deep in his brain an alarm began shrilling. The monastery. The strange baptism. The humming sound in the night.

Beppolinus lunged out of the house. He was running, running madly, for the monastery.

When he got there, he saw Brother Theodorus on his hands and knees in the vegetable garden, pulling weeds. The monk looked up and smiled. "Beppolinus! I didn't think we'd see you until tomorrow."

Gasping for breath, Beppolinus said, "I want to talk to you. Now."

The tone of his voice, strangled though it was, caused a certain stillness to descend over the monk's animated features. After a pause, Brother Theodorus said, "Yes. All right." His voice was full of resignation and weariness.

Beppolinus's eyes blazed. "I want to know why something in my possession — something precious, something I need to live — was damaged while I was here at the monastery."

"It's difficult to explain." Brother Theodorus was no longer speaking the degraded local version of Latin. Rather, he was addressing him in WorldEng. Speaking Beppolinus's own language, from his own time. The accent was a little odd, though. "You see, most regrettably, we had to destroy your transponder. It's become necessary for you to remain here, with us."

"You're from uptime." It wasn't a question.

"Of course, but you already knew that or we wouldn't be having this discussion."

"From when?"

"Oh, several centuries beyond yours."

Beppolinus sagged. He had hoped, somehow, that his suspicions

Continued on page 94

AD 2305: SEVEN HUNDRED YEARS BEFORE
THE EVENTS OF "THE ENGINE OF KIMERA"

MOON RAIN

THERE WERE ONLY MINUTES UNTIL THE COMET HIT THE MOON.

"You got to beat the future! — or it will beat you. Believe me, I've been there ..."

Xenia knew that Frank J Paulis thought this the most significant day in the history of the inhabited Moon, let alone his own career. And here he was now, a pile of softscreens on his lap, hectoring the bemused-looking Lunar Japanese in the seat alongside him, even as the pilot of this cramped, dusty evacuation shuttle went through her countdown.

"Look around you, pal. You guys have lasted three hundred years up here, in your greenhouses and your mole holes. A hell of an achievement. *But the Moon can't support you ...*"

Xenia Makarova had a window seat, and she gazed out of the fat, round portholes. Below the shuttle's hull she could see the landing pad, a plain of glass microwaved into lunar soil, here on the edge of the green domes of the Copernicus Triangle. And beyond that lay the native soil of the Moon: gray and brown, softly molded by a billion years of meteorite rain.

And bathed, for today, in comet light.

SADDLEPOINT: ROUGHNECK

A NOVELLA IN THREE PARTS
BY STEPHEN BAXTER

The count proceeded, in Japanese. Tanks pressurized. Guidance locked in. Coming up on one minute ...

Frank was still talking. Xenia had listened to Frank before. She'd been listening to him, in fact, for five years, or three hundred, depending on what account you took of Albert Einstein.

"You know what the most common mineral is on the Moon? Feldspar. And you know what you can make out of that? Scouring powder. Big deal. Sure, you can bake oxygen out of the rock. You can even make rocket fuel and glass. But there's no water, or nitrogen, or carbon —"

The Japanese, a business-type, said, "There are traces in the regolith."

"Yeah, traces, put there by the Sun, and it's being sold off anyhow, by Kawasaki Heavy Industries, to the Prion. Bleeding the Moon dry ..."

A child was crying. Xenia glanced around. The shuttle was just a cylinder-shaped cargo scow, hastily adapted to support this temporary evacuation. The scow was crammed with people, last-minute refugees — men and women and tall, skinny children — in rows of canvas bucket seats like factory chickens, subdued and serious.

And all of them were Lunar Japanese, save for Frank and Xenia, who were American; for, while Frank and Xenia had taken a time-dilated three-hundred-year jaunt to the stars — and while America had been scraped off the face of the Earth by the ice — the Lunar Japanese had been quietly colonizing the Moon.

"No," Frank said now, "you need volatiles. That's the key to the future. But now that Earth has frozen over nobody is resupplying. You're just pumping around the same old shit, literally in fact. I give you another hundred years, tops. Look around. You've already got rationing, strict birth control laws."

"There is no argument with the fact of —"

"How much do you need? I'll tell you. Enough to future-proof the Moon. Give it an atmosphere thick enough to breathe without a face mask. Oceans, without domes over them. *Terraform*."

"And you believe the comets can supply the volatiles we need for this?"

"Believe? That's what Project Prometheus is for. The random impact today is a piece of luck. It's going to make my case for me, pal. And when we start harvesting the comets, those big fat babies out in the Oort Cloud —"

"Ah," the Lunar Japanese was smiling, "and the person who has control of those comet volatiles —"

"— could buy the Moon." Frank reached for a cigar, a 20th-century habit long frustrated. "But that's incidental ..."

Ten seconds. Five. Three, two, one.

Stillness, for a fraction of a second. Then, a clatter of pyrotechnics, a muffled bang.

Xenia was ascending, in utter silence, as if in some crowded elevator, pressed back in her bucket seat with maybe a full gee.

Beyond her window stray dust streaked away across the pad glass, heaping up against fuel trucks and pipelines.

Soon she could make out the curve of the Moon, a black sky above the bright, lumpy horizon. They were heading toward lunar night, and the shadows were lengthening, fleeing from the brilliant comet light.

Earth rose.

It was, of course, the new Earth, coated from poles to tropics by its featureless white shroud of ice, glaringly bright, ragged and showing green-blue only at the equator. Even from here, she could see Prion flowerships circling the Earth, the giant ramscoops of the alien craft visible as tiny discs.

The Lunar Japanese around her applauded the smooth launch.

but it had a compelling wildness.

But even here the Moon had been shaped by humans, the Lunar Japanese; the ancient, shattered land was scored by crawler tracks, overlaid by the glittering silver wires of mass driver rails.

... And now, as the shuttle tilted and settled into its two-hour orbit around the Moon, Xenia saw a sight she knew no human had ever seen before today:

Comet rise, over the Moon.

The coma, a diffuse mass of gas and fine particles, was a ball as big as the Earth, so close now it walled off half the sky, a glare of lacy, diffuse light. Massive clumps in the coma, backlit, cast shadows across the smoky gases, straight lines thousands of miles long radiating at her. She looked for the nucleus, a billion-ton ball of ice and rock. But it was too small and remote to see, even now, a few minutes from impact. And the tail was invisible from here, fleeing behind her, running ahead of the comet and stretching far beyond the Moon, reaching halfway to Mars, in fact.

The comet was coming out of the Sun, straight toward the Moon at 40 thousand miles an hour,

... and now there was light, all around the shuttle.

She craned her neck to see. The Moon and its human cargo, including this shuttle, were already inside the coma. It was like being inside a diffuse, luminous fog.

"*Vileekee bokh*."

Frank said, "What?"

"We're inside a comet ..."

Frank leaned across her, trying to see. He was a small, stocky man, with thick legs and big prizefighter muscles built for Earth's gravity, so that he always looked like some restless, half-evolved ape alongside the tall, slim Lunar Japanese. He was 60 years old, physiological; he was bald as a coot and his nose was a misshapen mass of flesh.

"*Eta prikrasna*," Xenia murmured.

"Beautiful. Yeah. Makes you think, though."

"About what?"

"How easy it is to get off the Moon. Compared to the Earth anyhow. I mean, look at this old rust-bucket. We're packed in here. It was the same for Neil and Buzz. In their dinky LM, they don't have to wait for 50 thousand government employees to load millions of gallons of lox onto some giant Nazi rocket. They just stow the Moon rocks and put away the sandwiches and press the button; and a little diddly rocket the size of a car engine squirts them off into space. Now, if we'd evolved on the Moon instead of the Earth you could have made an orbit-capable rocket ship in your back yard. You wouldn't need government support. An unreconstructed capitalist like me could have made it big ..."

"That's all this means to you?"

He grinned. "Anyhow, today it looks like we're the last off the Moon." "Oh, no," she said. "There's a handful of old nuts who won't move, no matter what."

"Even for a comet?"

"Takomi. He's still there."

"Who?"

"He's notorious."

"I don't read the funny papers."

"Takomi is the hermit who lives out in the ruins of Edo, on Farside."

"No resupply?"

"Evidently he won't even respond to radio calls."

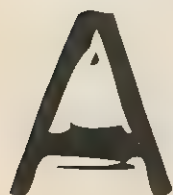
Frank frowned. "This is the *Moon*. How does he live? By sucking oxygen out of the rock?"

But Frank's Lunar Japanese companion was tapping him on the shoulder. "I overheard. I apologize. You knew Neil? *Armstrong*?"

"Hell, yes," said Frank, and he started to explain how, to the wide-eyed Lunar Japanese.

Xenia suppressed a smile and turned back to the window. Of course it wasn't true. Frank had been born all of 75 years *after* Apollo 11. But the truth about America no longer mattered, she knew, because there was nobody to check up any more.

... The light changed.



WAY FROM THE COPERNICUS COMPLEX THE LUNAR surface was bare, streaked by long shadows. It looked like a bombing run, she thought, crater on crater, right down to the limit of visibility: not a square inch of it left untouched by the unending, mindless bombardment. The Moon could never be called beautiful — it was too damaged for that —

There was a soft Fourth-of-July gasp from the people crammed into the shuttle.

A dome of blinding white light rose like a new Sun from the surface of the Moon: comet material turned to plasma by the shock wave, mixed with shattered rock. Xenia thought she could see a wave passing *through* the Moon's rocky hide, a sluggish ripple in rock turned molten, gathering and slowing, crater walls forming as she watched.

So the comet had struck the Moon.

At the center of the crater a new mountain was thrust up: a block of primordial rock dug out from 15 miles beneath the surface. The crater's rim and walls, cooling and slowing, were already collapsing under their own weight, forming complex terraces. Some of the rock was still molten and flowed like lava across the gouged-out landscape; the melt-sheet cooled and hardened in place, like a fresh lava flow on Earth. Fountains of glowing rock bombs hailed over the surface beneath Xenia, covering the terrain for miles around the rim of the primary crater, which itself was now all of 50 miles across.

And now, spreading out over the Moon's dusty gray surface, she saw a faint wash of light. It seemed to pool in the deeper maria and craters, flowing down the contours of the land like a morning mist on Earth.

It was air: gases from the shattered comet, an evanescent atmosphere pooling on the Moon.

And, in a deep, shadowed crater, at the ghostly touch of the air, she saw light flare.

It was only a hint, a momentary splinter at the corner of her eye. She craned to see. Perhaps there was a denser knot of smoke or gas, there on the floor of the crater; perhaps there was a streak, a kind of contrail, reaching out through the temporary comet atmosphere.

It must be some byproduct of the impact. But it had looked as if somebody had launched a rocket, from the surface of the Moon.

But already the contrail had dispersed in the thin, billowing comet air.

People were applauding again, with the beauty of the spectacle, relief at being alive.

It was only after they landed that it was announced that the comet nucleus had landed plumb on top of the dome in Fracastorius Crater.

FRACASTORIUS, ON THE RIM OF THE SEA OF NECTAR, WAS one of the largest settlements away from the primary Copernicus-Landsberg-Kepler triangle. The loss of life was small, but the economic and social damage huge. Perhaps unrecoverable.

The Lunar Japanese grieved.

But Frank Paulis got back to work, even before the shuttle landed. The very next day he called Xenia into his office.

When she arrived he had his feet up on his desk. He was reading, on a softscreen, some long, text-heavy academic paper about deep-implanted volatiles on the Earth. She tried to talk to him about Fracastorius, but he patently wasn't interested. Nor was he progressing Prometheus, his main project.

"Frank, what are you doing? What about the comet?"

He blinked at her. "The comet is history, babe."

"I thought it was going to supply us with volatiles. I thought it was going to be the demonstration we needed that Prometheus was a sound investment."

"Yeah. But it didn't work out." Frank tapped the surface of his desk and a softscreen embedded there lit up with numbers, graphics. "Look at the analysis. We got some volatiles. But most of the nucleus's mass was just blasted back to space. Tough break." He looked thoughtful, briefly. "One thing, though. Did you know the Moon is going to get an atmosphere out of this? It will last for a thousand years —"

"Iroonda."

"No, it's true. Thin, but an atmosphere, of comet mist. Carbon diox-

ide and water and stuff. How about that." He shook his head. "Anyhow, it's of no use to us."

"But Prometheus —"

He shrugged. "I ran the math. The comet was inefficient. I figure you'd need around a *thousand* impactors like this one to future-proof the Moon fully. And we aren't going to get a thousand impactors, not with the Chinese on Mars and the Australians at Neptune and the damn Prion everywhere."

He didn't seem concerned.

Puzzled, she said, "Frank, I'm sorry."

"Huh? Why?"

"If comets are the only source of volatiles —"

"Yesterday I thought they were. But look at this." He tapped his softscreen. He was talking fast, excited, enthusiastic, his mind evidently racing. "There's an author here who thinks there are all the volatiles you could want, a hundred times over — *right here on the Moon*. Can you believe that?"

"That's impossible. Everyone's known the Moon is dry as a bone, since Apollo 11."

He smiled. "That's what everyone *thinks*. I want you to find this woman for me. The author of the paper."

"Frank —"

"And find out about mining."

"Mining?"

"The deeper the better." His grin widened. "We went to the stars, and found nothing but shit. And then we wasted years chasing comets. But it's all over now."

"It is?"

"How would you like a journey to the center of the Moon, baby?"



XENIA AND FRANK HAD SPENT A YEAR OF THEIR LIVES on a Prion flowership, submitted themselves to the unknown hazards of several Saddle Point gateway teleport transitions, and got themselves relativistically stranded in an unanticipated future. And they had come back, to *this*: a crowded Moon, owned by other people.

And it was all for the sake of a visit to a dull, nondescript G-class star. No worlds to explore, no business angles for Frank.

They had felt cheated.

Not that they hadn't prospered, here.

The Moon of the 24th century, as it turned out, had a lot in common with early 21st-century Earth. Deprived of its lifelines from the iced-up home world, the Moon was full: stagnant, a closed economy. But Frank had seen all this before, and he knew that economic truth was strange in such circumstances. For instance, as the scarcity of materials increased, industrial processes that had once been unprofitable suddenly became worthwhile; Frank had made a lot of money out of re-engineering an abandoned technology that made use of lunar sulphur and oxygen as a fuel source.

Within five years Frank J Paulis had become one of the hundred wealthiest individuals on the Moon, taking Xenia right along with him.

But it wasn't enough. Frank found it impossible to break into the close-knit business alliances of the Japanese. And besides, Xenia suspected, he felt cooped up here, on the Moon.

There were no humans left on Earth — save, the rumors went, for a few gen-eng'd post-human types in the equatorial belt, maybe elsewhere. America was gone, of course, except for a handful of galactic wanderers like Xenia and Frank, dispersed on Prion ships through the Saddle Point gateways to star systems near and remote, over the years drifting back in ones and twos like relativistic snowflakes.

And they were all odd-balls.

Psychological screw-ups were common, out there between the stars. Knowing a trip could take centuries, who else would go? The star travelers were, by definition, people with nothing to lose on Earth. Misfits. Dismally failed marriages, a hostile son, a posse of lawsuits, like Frank J. No family, a dead-end job, like Xenia — who had been drawn by Frank's energy to his employ, then his bed, and

at last to his side, en route to the stars.

Anyhow, that was why this comet had been so important for Frank. It would shake everything up, he said. Change the equation.

Project Prometheus — his study of shipping in terraforming volatiles from the comets — had got as far as designs for methane rockets, which could have pushed the Oort comets out of their long, slow, distant orbits and brought them in to the Moon. It had consumed all his energies for years, and cost a fortune. He needed investors, and had hoped the comet impact would bring them in.

But as soon as he realized Prometheus was impractical, and politically impossible besides, here was Frank launching himself, with equal enthusiasm, into other ventures. It was either admirable, she thought, or schizophrenic.

After all these years — during which time she had been his companion, lover, employee — Xenia still didn't understand him; she freely admitted it.

He was an out-and-out capitalist, no doubt about it. But every ounce of his huge ambition was constantly turned on the most gigantic of projects: the future of a world! the destiny of mankind!

What Xenia couldn't work out was whether Frank was a visionary who used capitalism to achieve his goals, or just a capitalist after all, sublimating his greed and ambition. But, swept along by his energy and ambition, she found it hard to focus on such questions.

She started work.

TO LAUNCH HIS NEW PROJECT, FRANK, FEVERISH WITH enthusiasm, leased Landsberg's Grand Auditorium itself.

The auditorium was at the heart of Landsberg. The dome itself, a blue ceiling above, was a thick double sheet of quasiglass, cable-stayed above and below by engineered spider web. The dome was filled with water, a sandwich of blue, through which fish swam, goldfish and carp. The water shielded Landsberg's inhabitants from radiation, and served to scatter the raw sunlight.

Thus, in Landsberg, the sky was royal blue and full of fish. After five years, Xenia still couldn't get used to it.

Bathed in watery light, pacing his stage, Frank J Paulis was a solid ball of terrestrial energy and aggression, out of place on the small, delicate Moon.

"You got to beat the future! — or it will beat you. Believe me, I've been there. I believed that before I went to the stars, and I believe it now. I'm here to tell you how ..."

Frank was standing before a huge three-dimensional facsimile, a Moon globe sliced open to reveal arid, uninteresting geological layers. Beside him sat Mariko Nishizaki, the young academic type whose paper had fired Frank off in this new direction. She looked slim and uncertain in the expensive new suit Frank had bought for her.

Xenia was sitting at the back of the audience, watching rows of cool faces: politicians, business types. They were impassive. Well, they were here, and they were listening, and that was all Frank would care about right now.

"... We need volatiles," Frank was saying, "not just to survive, but to get our work done. To expand. To grow, economically. Water. Hydrogen. Helium. Carbon dioxide. Nitrogen. Maybe nitrates and phosphates to supplement the biocycles.

"But the Moon doesn't have volatiles. Everyone knows that. The Moon is just a ball of low-grade aluminum ore, created out of the Earth as the result of a giant primordial collision. Wherever we've looked, save for the occasional cold trap, we've found barely a trace of volatiles; and those that are present have been implanted by the solar wind in the top few feet of the regolith. So we have to bring in volatiles, from the Earth, the comets, the outer planet moons, wherever. Because everyone knows the Moon is a desert. Right?" He leaned forward. "Dead wrong.

"I'm here today to offer you a new paradigm. I'm here to tell you that the Moon itself is rich in volatiles, almost unimaginably so, enough to sustain us and our families, hell, for millennia. And, inci-

dentally, to make us rich as Croesus in the process."

Barely a flicker of interest in the audience, Xenia saw.

Three centuries and a planetary relocation hadn't changed the Japanese much, and cultural barriers hadn't dropped; they were still suspicious of the noisy *gaijin* who stood before them, breaking in from outside the subtle alliances and protocols that ruled their lives.

But now Frank stood back. "Tell 'em, Mariko."

The slim Lunar Japanese scientist got up, evidently nervous, and bowed deeply to the audience. With the aid of a softscreen poster she began a long, rapid, and very technical presentation on the early history of the solar system.

Xenia's attention wandered.

The Moon's surface here was like a park. Grass covered the ground, much of it growing out of bare lunar regolith. Behind Frank there was a stand of mature palms, a hundred feet tall, and a scattering of cherries. People lived in the dome's support towers, thick central cores with platforms of lunar concrete slung from them. The lower levels were given over to factories, workshops, schools, shops, and other public places.

Right now, far above Frank's head, Xenia could see a little flock of schoolchildren in their white and black uniforms, flapping back and forth on Leonardo wings, squabbling like so many chickens. It was beautiful. But it served to remind her there were no birds here, outside pressurized cages. Birds tired too quickly, in the thin air, on the Moon, against intuition, birds couldn't fly.

The Japanese, inured to natural disaster over the centuries, had moved capitals before. In some ways Landsberg represented the continuity of Japan, uninterrupted by a little thing like the end of Earth. The Lunar Japanese called Landsberg *nihon no furusati*, the heart of Japan. And so it was. The Emperor lived here, still revered as a god, as his ancestors had been revered since the eighth century.

But, sitting here, she was surrounded by subtle noises: the bangs and whirs of fans and pumps, the bubbling of aerators in the fountains and ponds. Landsberg, a giant machine, had to be constantly run, managed, maintained.

Thinking about that now, watching the children play in the warm air wafted by a great roof-top fan, Xenia had an intuition about the rightness of Frank's vision, whatever his methods.

Landsberg, this high-tech, managed environment, was no long-term answer. The Moon had to become a world that could sustain itself without conscious human intervention. Just in case our children, she thought, are less smart, or less lucky, than we are.

And if Frank could make a little profit along the way, she wasn't about to grudge him that.

She tried to focus on what Mariko was saying.

Earth, Moon, and the other planets — said Mariko — had condensed, almost five billion years ago, from a swirling cloud of dust and gases. That primordial cloud had been rich in volatiles — three percent of it was water, for instance. You could tell that was so from the composition of asteroids, which were left-over fragments of the cloud.

But there was an anomaly. If you added together all the water on Earth, for example, in the oceans and atmosphere and the ice sheets, it added up to less than a *tenth* of that three percent fraction.

Where did the rest of the water go?

Mariko believed it was still there.

She believed there was water and other volatiles trapped deep within the Earth, in the mantle. She presented old evidence compiled by Earth-bound geologists. They found helium, a light gas that should have escaped Earth long ago, leaking from the mantle plumes that built island chains like Hawaii. They found water in minerals dragged up from hundreds of miles down by kimberlites, iron-magnesium rocks that hauled up exotic high-pressure mineral specimens like diamonds. Seismic waves traveled slowly in some parts of the mantle, and such waves would, Mariko said, be slowed down by the presence of water.

The water wouldn't be present as a series of immense buried oceans; rather it would be scattered as droplets, some as small as a single molecule, trapped inside crystal lattices of the minerals that formed under the intense pressure down there.

And what was true of Earth would be true of the Moon.

According to Mariko, the Moon was made mostly of material like Earth's mantle. It was smaller than the Earth, cooler and more rigid, so that the center of the Moon was analogous to the Earth's mantle layers a few hundred miles deep. And it was precisely at such depths, on Earth, where such water-bearing minerals as majorite and wadsleyite were found ...

Frank watched his audience like a hawk.

Now he stepped forward, peremptorily interrupting Mariko. He waved a hand. His cartoon Moon globe suddenly lit up, overshadowing the dry charts and equations on Mariko's screen. Now the onion-skin geological layers were supplemented by a vivid blue ocean, lapping in unlikely fashion at the Moon's center. Xenia smiled. It was typical Frank. Inaccurate, but compelling.

"Listen up," he said. "What if Mariko is right? What if even *one percent* of the Moon's mass by weight is water? That's the same order as the water in all Earth's oceans and ice sheets and atmosphere.

"And that's not all. Where there is water there will be other volatiles: carbon dioxide, ammonia, methane. Maybe even hydrocarbons. And all we have to do is go down there and find it." He grinned. "There's a huge ocean down there, gentlemen, and it's time to go skinny-dipping."

There was a frozen silence, which Frank milked expertly. Then he snapped: "Questions."

You say these volatiles date from the formation of the solar system. But as you noted, we know Earth-Moon was shaped by a giant impact with a Mars-sized planetesimal. Mantle material was driven from the Earth into an orbiting cloud. Which collapsed to form the Moon. The great heat of collapse would surely have baked out the volatiles...

"Maybe," Frank said. "But Mariko tells me it's possible the volatiles, suspended in the cloud that condensed into the Moon, will have gotten trapped once more in its interior. Then again, maybe not. Nobody knows. Nobody cares much about the deep interior of the planets; for three hundred years we've been too busy scratching their surfaces. The seismic data, even now, even on the Moon, is patchy. It's impossible to say. We're going to have to go look-see."

Look-see? Paulis-san, please tell us what you are proposing, specifically.

"Isn't it obvious?" He waved a hand, and in his cartoon Moon a triumphant scarlet thread dug straight down from the surface, arrowing toward the core. "Gentlemen, I'm inviting you to join me in the mining business. Deep mining. We're going to go down there and find out."

Now there was head-shaking, murmuring, even a little laughter.

"It won't be easy," Frank said. "The record for a deep mine on Earth is only a few miles. And *nobody* has seriously mined the Moon, because we never expected to find anything down there. Right? We know there won't be the huge hydrothermal ore deposits we were able to exploit on Earth. In fact, across the solar system as a whole, mining technology hasn't advanced much beyond what they had in the 20th century.

"But the Moon is cooler, much more rigid, more stable than Earth. The temperature and pressure gradients as you go down are comparatively gentle. Believe me, our drill bits are going to sink down through those cold Moon rocks like a knife through butter ..."

You are proposing some sort of test bore?

"Hell, no," he said, and he grinned under his fleshy nose. "Our borehole will be yards wide. A tunnel into the Moon. Why the hell not? That way we can send down Mariko and her double-domed buddies

to do some serious seismology and whatever else they feel they need to do. We can go sideways, open up whatever seam we find. And, hell, that way we can go down there and see for ourselves."

But the energy required for such an immense bore will drain our resources. At a time when we are striving to rebuild Fracastorius —

Frank shook his head. "Past a certain depth I'll power myself. Thermal energy from the hot deep rocks. All I need is seedcorn resources."

But still, Fracastorius should be the priority —

Frank stepped to the front of the little stage and glared around at them. "Gentlemen, I'm calling this new enterprise 'Roughneck.' If you want to know why, go look it up. I'm asking you to invest in me, in Roughneck. Sure it's a risk. But if it works it's a way past the resource bottleneck we're facing, here on the Moon. And it will make you rich beyond your wildest dreams." He held the stare for one moment more.

Then he turned away. "If you want a piece of this, you know how to find me."

The Moon globe popped like a balloon, showering pixels, and Frank J Paulis had left the stage.



GETTING THE SEEDCORN INVESTMENT TURNED OUT TO be the easy part.

There never had been a mining industry, here on the Moon.

So Frank and Xenia were forced to start from scratch, inventing afresh not just an industrial process but the human roles that went with it. They were going to need a petrophysicist and a geological engineer to figure out the most likely places they would find their imagined reservoirs of volatiles; they needed reservoir engineers and drilling engineers and production engineers for the brute work of the borehole itself; they needed construction engineers for the surface operations and support. And so on.

They had to work job descriptions, and recruit and train to fill them as best they could.

Then there were the practical problems, which they hit as soon as they started to trial heavy equipment in the ultrahard vacuum that coated the Moon. Friction was a killer, for instance: in an atmosphere there is a thin layer of adhered water vapor and oxides to reduce drag, but that didn't apply here. They even suffered vacuum welds. Not only that, the ubiquitous dust — the glass-sharp remains of ancient, shattered rocks — stuck to everything it could, scouring and abrading. Stuff wore out *fast*, on the silent surface of the Moon.

But they persisted.

They learned to build in a modular fashion, with parts that could be replaced easily by a person in a spacesuit. And they learned to cover all their working joints with sleeves of a flexible plastic, to keep out the dust. After much experimentation they settled on a lubricant approach, coating their working surfaces with the substance the Lunar Japanese called "quasiglass," hard and dense and very smooth; conventional lubricants just boiled or froze.

The work soon became all-absorbing. Even when Frank had enough investors to fund his start-up, the practical problems were just beginning, and Xenia found herself immersed.

But the Lunar Japanese, once committed to the project, learned fast, and were endlessly, patiently, inventive in resolving problems.

THE MOON HAD TO BECOME A WORLD THAT COULD
SUSTAIN ITSELF WITHOUT CONSCIOUS HUMAN

INTERVENTION. JUST IN CASE ...

It seemed to Xenia a remarkably short time from inception to the day Frank told her he had chosen his bore site.

"The widest, deepest impact crater in the solar system," he said. "Hell, just by standing at the base of that thing we'd be halfway to the core already. And the best of it is, we can buy it. Nobody has lived there since they cleaned out the last of the cold trap ice ..."

He was talking about the South Pole of the Moon.



XENIA PULLED ON THE LAYERS OF HER SURFACE SUIT.

First came a bodyform, pressurized long-johns of engineered spider web. She tested the body waste pack and air conditioning. Next came a layer of body armor, a shield against micrometeorites and accidental collisions. Her life-support pack went on top of that; she could feel smart interfaces, feeder and waste pipes for air and water, nuzzling into sockets on her back, and immediately cool air started to flow under the bodyform. Her helmet was a bubble of quasiglass; the helmet was padded to fit her head, and moved when she did.

Finally she pulled on a disposable coverall and her radiation poncho, a light protective cape.

Thus, encased in spider web, Xenia stepped out of the hopper.

This was the Moon Pole. It was a place of shadows. There were stars above her. And the horn of crescent Earth poked above one horizon, gaunt and ice-pale.

Here, standing at the base of the crater called Amundsen, Xenia could actually see the Sun, a sliver of light poking through a gap in the enclosing rim mountains, casting long, stark, shadows over the colorless, broken ground. She knew that if she stayed for a month the Moon's glacial rotation would sweep that solar searchlight around the horizon. But the light was always flat and stark, like an endless dawn or sunset.

At the center of Amundsen, Frank's complex sprawled in a splash of reflected light, ugly, busy, full of people.

Here came Frank in his spacesuit, Lunar Japanese spider web painted with a gaudy Stars & Stripes. "I wondered where you were," he said.

"There was a lot of paperwork, last-minute permissions —"

"You might have missed the show." He was edgy, nervous, restless; his gaze, inside his gold-tinted visor, swept over the crowd. "Whatever. Come see the rig."

Together, they loped toward the center of the complex, past Frank's perimeter of security guards.

New Dallas, Frank's boomtown, was a crude cluster of buildings put together adobe-style from lunar concrete blocks. She could recognize shops, warehouses, dormitories, mess halls. There was a motor pool, hoppers and tractors and heavy machinery clustered around fuel tanks. And there was Frank's geothermal plant, ready for operation, boxy buildings linked by fat, twisting conduits. The inhabited buildings had been covered over for radiation-proofing by a few feet of regolith.

This wasn't Landsberg.

But it was actually bright here, the sunlight deflected into the crater by heliostats, giant mirrors perched on the rim mountains or on impossibly tall gantries. The stats worked like giant floodlights, giving the town, incongruously, the feel of an old American floodlit sports stadium. The primary power came from sunlight too, solar panels that Frank had had plastered over the peaks of the rim mountains.

The ground for miles around was flattened and scored by footprints and vehicle tracks. It was hard to believe *none* of this had been here two months ago, that the only signs of human occupation then had been the shallow, abandoned strip mines in the cold traps.

And at the center of it all was the derrick itself, rising so far above the surface it caught the distant sunlight. Sheds and shops sprawled around its base, along with huge aluminum tanks and combustion engines. Mounds of rock, dug out in test bores, surrounded it like a row of pyramids.

Close to, the derrick seemed immense: It was hundreds of feet high, in fact, Frank said it was tall enough to stack up three or four

joints of magnesium alloy pipe at a time. There was a pile of the pipe nearby, miles of it spun from native lunar ore, the cheapest component of the whole operation.

They reached the drilling floor. At its heart was the circular table through which the pipe would pass, and which would turn to force the drill into the ground. There were foundries and drums, to produce and pay out cables and pipes: power conduits, fiber-optic light pipes, hollow tubes for air and water and sample retrieval.

Xenia stood at the center of the drilling floor. She looked up into the structure of the derrick itself. It was tall and silent, like the gantry for a Saturn V. Stars showed through its open, sunlit frame. And suspended there at the end of the first pipe-lengths she could see the drill head itself, teeth of tungsten and diamond, gleaming in the lights of the heliostats.

Frank was describing technicalities that didn't interest her. "You know, you can't turn a drill string more than a few miles long. So we have to use a downhole turbine ..."

"*Frank, eta ochin kraseeva.* It is magnificent. Somehow, back in Landsberg, I never quite believed it was real."

"Oh, it's real," Frank said.

"But think of it. That thing is going to dig hundreds of miles beneath our feet."

"If it works. If it doesn't melt ... or break down ... or ..." He checked his chronometer, a softscreen patch sewn into the fabric of his suit. "It's nearly time."

They moved out into the public area.

Frank had made an event of the day. There must have been a hundred people here, she saw now, men, women, and children walking in their brightly colored surface suits and rad ponchos, or riding in little short-duration bubble rovers. Frank had set up a kind of miniature theme park, with toy derricks you could climb up, and a towering roller-coaster based on an old-fashioned pithead rail — towering because height was needed, here on the Moon, to generate anything like a respectable gee-force.

The main attraction was Frank's fish pond, she saw, a small crater he'd lined with ceramic and filled up with water. The water froze over and was steadily evaporating, of course, but water held a lot of heat, and the pond would take a long time to freeze to the bottom. In the meantime there were fish swimming back and forth in there, goldfish and handsome koi carp, living Earth creatures protected from the severe lunar climate by nothing more than a few feet of water.

Roughneck was the biggest public event on the Moon in a generation. Cameras hovered everywhere. She saw Observers, adults and children in softscreen suits, every sensation being fed out to the rest of the Moon.

The openness scared Xenia to death. "Are you sure it's wise to have so many people here?"

"The guards will keep out those Gray assholes."

The Grays were a pressure group who had started to campaign against Frank. Arguing it was wrong to go digging holes to the heart of the Moon, to rip out the *uchujin* there, the cosmic dust. They were noisy but, as far as Xenia could see, ineffective.

"Not that. It's so public. It's like Disneyland."

"Don't you get it? This is *essential*. We'll be lucky if we make hole at a mile a day. It will take 50 days just to get through the crust. We're going to sink a hell of a lot of money into this hole in the ground before we see a red cent of profit. We need those investors on our side, for the long term. They have to be here, Xenia. They have to see this."

"But if something goes wrong —"

"We're screwed anyhow. What have we lost?"

Everything, she thought, if somebody gets killed, one of these cute Lunar Japanese five-year-olds climbing over the derrick models. But she knew Frank would have thought of that, and discounted it already, and no doubt figured out some fallback plan.

She admired such calculation, and feared it.

A warning tone was sounding on their headsets' open loops now, and in silence the Lunar Japanese, adults and children alike, were lining up to watch the show.

Xenia could see the drill bit descend toward the regolith, the pipe sweeping silently downward inside the framework, like a muscle

moving inside a sheath of flesh.

The bit sank into the Moon.

A gush of dust sprayed up immediately from the hole, ancient regolith layers undisturbed for a billion years, now thrown unceremoniously toward space. At the peak of the parabolic fountain, glassy fragments sparkled in the sunlight. But there was no air to suspend the debris, and it fell back immediately.

Within seconds the dust had coated the derrick, turning its bright paintwork gray, and was raining over the spectators like volcanic ash.

There was motion around her. People were applauding, she saw, joined in this moment. Maybe Frank was right to have them here, after all, right about the mythic potential of this huge challenge.

He was watching the drill intently. "Twenty or 30 yards," he said.

"What?"

"The thickness of the regolith here. The dust. Then you have the megaregolith, rock crushed and shattered and dug out and mixed by the impacts. Probably a couple of miles of that. Easy to cut through. Maybe we'll get to the anorthosite bedrock by the end of the first day, and then —"

She took his arm. Even through the layers of suit she could feel the tension in his muscles. "Hey. Take it easy."

"I'm the nervous father, right?"

"Yeah."

He took little steps back and forth, stocky, frustrated. "Well, there's nothing we can do here. Come on. Let's get out of this Buck Rogers shit and hit the bar."

"All right."

Xenia could hear the dust spattering over her helmet. And children were running, holding out their hands, in the gray Moon rain.

IT DREAMS OF ROCK AND STILLNESS

HER WORLD WAS SIMPLE: THE LAND BELOW, LIGHT THAT FLOWED from the Dark above. Land, Light, Dark. That, and herself, alone.

Save for the Giver.

For her, all things came from the Giver. All life, in fact.

Her first memories were of the Giver, at the interface between the parched Land and the hot Dark above. He fed her, sank rich warm moist substance into the Land, and she ate greedily. She felt her roots dig into the dry depths of the Land, seeking the nourishment that was hidden there. And she drew the thin soil into herself, nursed it with hot Light, made it part of herself.

She knew the future. She knew what would become of herself and her children: that they would wait through the long hot-cold bleakness for the brief Rains. Then they would bud, and pepper this small hard world with life, in their glorious blossoming. And she would survive the long stillnesses to see the Merging itself, the wonder that lay at the end of time, she and her children.

But she was the first, and the Giver birthed her. None of it would have come to be without the Giver.

She wished she could express her love for him. She knew that was impossible.

She sensed, though, that he knew.



OVERWHELMED BY WORK AS SHE WAS, XENIA couldn't get the memory of the comet impact out of her head.

In the moment of that gigantic collision she had glimpsed a contrail; for all the world as if someone, something, had launched a rocket from the surface of the Moon.

But who, and why?

She had no time to consider the question as Roughneck gathered pace. At last, though, she freed up two or three days from Frank, plead-

ing exhaustion. She determined to use the time to resolve the puzzle.

Xenia was home for the first time after many days of sleeping at the Roughneck project office.

She took a long, hot bath to soak out the gritty lunar dust from the pores of her skin. In her small tub the water sloshed like mercury. Condensation gathered on the ceiling above her, and soon huge droplets hung there suspended, like watery chandeliers.

When she stood up the water clung to her skin, like a sheath; she had to scrape it loose with her fingers, depositing it carefully back in the tub. Then she took a small vacuum cleaner and captured all the loose droplets she could find, returning every scrap to the drainage system, where it would be cleansed and fed back into Landsberg's great dome reservoirs.

She made herself some coffee — fake, of course, and not as hot as she would have liked, given the relatively low pressure. She sat on a *tatami* mat made of rice straw matting, which was unreasonably comfortable in the low gravity, and sipped her drink.

Her apartment was a glass-walled cell in the great catacomb that was Landsberg. It had, in fact, served as a *genkan*, a hallway, for a greater establishment in easier, less crowded times; it was so small her living room doubled as a bedroom. The floor was covered with *tatami*, though she kept a *zabuton* cushion for Frank Paulis. Her technical equipment was contained within a *tokonoma*, an alcove carved into the rock, but she had also hung a scroll painting there, of a Samurai in an unlikely pose, and some dried flowers. The flowers were real, and had cost as much as the rest of her furnishings put together.

The miniature Japanese art around her filled the room with space and stillness.

She had been happy to accept the style of the inhabitants of this place, unlike Frank, who had turned his apartment into a shrine to Americana. It was remarkable, she thought, that the Japanese had turned out to be so well adapted to life on the Moon. It was as if their thousands of years on their small, cramped islands had readied them for this greater experience.

She tuned the walls to a favorite scene — a maple forest, carpeted with bright green moss — and padded, naked, to her *tokonoma*.

It took seconds to establish there was no indexed record of that surface rocket launch, as she had expected.

There was, however, a substantial database on the state of the whole Moon at the time of the impact; every sensor the Lunar Japanese could deploy had been turned on the Moon, that momentous morning.

And she found what she wanted, in a spectrometer record from a low-flying satellite.

The site, from this automated viewpoint, was low on the horizon — a bright splinter at the heart of the image, in fact, was an infrared trace of the nozzles of the evacuation shuttle she herself was riding at the time — but with enhancement and image manipulation she could recover a good view, much as she had seen it herself.

There was the contrail, bright and hot, arcing through splashed cometary debris. Spectrometer results told her she was looking at the product of aluminum burning in oxygen.

So it had been real.

She widened her search farther.

Yes, aluminum could serve as a rocket fuel. It had a specific impulse of nearly three hundred seconds, in fact, not as good as the best chemical propellant (that was hydrogen, which burned at four hundred), but serviceable. And aluminum-oxygen could even be manufactured from the lunar soil.

Yes, there were more traces of aluminum-oxygen rockets burning on the Moon that day, recorded by a variety of automated sensors. More contrails, snaking across the lunar surface, from all around the Moon. There were a dozen, all told, perhaps more in parts of the Moon not recorded in sufficient detail. And each of them, she found, had been initiated when the gushing comet gases reached its location.

She pulled up a virtual globe of the Moon and mapped the launch sites. They were scattered over a variety of sites: highlands and maria alike, Nearside and Farside. No apparent pattern.

Then she plotted the contrails. The visible tracks had stretched just a few miles through the thin comet air. And so she extrapolated

them, allowing them to curl around the rocky limbs of the Moon.

The tracks converged, on a single Farside site. Edo. The place the hermit, Takomi, lived.

It was the first Rain of all.

Suddenly there was air here, on this still world. At first there was the merest trace, a soft comet Rain that settled, tentatively, on her broad leaves, when they lay in shade. But she drank it in greedily, before it could evaporate in the returning Light, incorporating every molecule into her structure, without waste.

With gathering confidence she captured the Rain, and the Light, and continued the slow, patient work of building her seeds, and the fiery stuff that would birth them, drawn from the patient dust.

And then, so suddenly, it was time.

In a single orgasmic spasm the seeds burst from her structure. She was flooded with a deep joy, even as she subsided, exhausted.

The Giver was still here with her, enjoying the Rain with her, watching her blossom. She was glad of that.

And then, so soon after, there was a gusting wind, a rush of the air molecules over her damaged surfaces, as the comet drew back its substance and leaped from the Land, whole and intact, its job done. The noise of that great escape into the Dark above came to her as a great shout.

Soon after, the Giver was gone too.

But it did not matter. For, soon, she could hear the first tentative scratching of her children, carried to her like whispers through the still, hard rock, as they dug beneath the Land, seeking nourishment. There was no Giver for them, nobody to help; they were beyond her aid now. But it did not matter, for she knew they were strong, self-sufficient, resourceful.

Some would die, of course. But most would survive, digging in, waiting for the next comet Rain.

She settled back into herself, relishing the geologic pace of her thoughts. Waiting for Rain.



XENIA TOOK AN AUTOMATED HOPPER, ALONE, TO Farside. The journey was seamless, the landing imperceptible.

A small tractor, just a platform mounted by a bubble of tinted glass, rolled off the hopper's base, bearing Xenia. The sky was black, but the ground was brightly lit, as if by footlights on the floor of some huge theater. Earth was invisible, of course, but she could see a satellite crawl across the black sky, remote, monitoring.

Beyond the curve of the tractor's window, the Mare Ingenii — the Sea of Longing — stretched to the curved horizon, pebble-strewn. It was late in the lunar afternoon, and the sunlight was low, flat; the mare surface was like a gentle sea, a complex of overlapping, slowly undulating curves. The tractor's wheels were large and open, and they absorbed the unevenness of the mare, so that it was as if she were floating.

But now she came to a place where the mare seemed unusually flat, free even of the shallow, dusty crater remnants.

Xenia stopped the tractor.

She saw two cones, tall and slender, side by side, geometrically perfect. They cast long shadows in the flat sunlight. She couldn't tell how far away they were, or how big, so devoid was this landscape of visual cues. They simply stood there, stark and anomalous. She shivered.

She was still a mile short of Edo, but felt she had found Takomi.

She donned her spider-web suit, checked it, and stepped into the tractor's small, extensible airlock. She waited for the hiss of escaping air, and — her heart oddly thumping — she collapsed the airlock around her and stepped onto the surface of the Moon. A little spray of dust, ancient pulverized rock, lifted up around her feet.

Nothing moved here, save herself and what she touched. There was utter silence. Xenia fought an impulse to turn around, to look to

see who was creeping up behind her, in this horror-movie stillness.

The sky remained black ... save, she saw, for the faintest wisp of white, glowing in the flat sunlight. Ice crystals, suspended in the thin residual atmosphere of the comet impact.

Cirrus clouds, on the Moon.

She turned away from the tractor, to face the cones, and walked forward, loping easily.

The regolith was flat, free of crater indentations, as if brushed or rolled. Her footsteps were sharp, the only breaches of this snow-like perfection. She felt an odd impulse to back up, retrace her steps, smooth them over.

She came to a place where the regolith had been raked.

She slowed, standing on bare, unworked soil.

The raking had made a series of parallel ridges, each maybe two or three inches tall, a few inches apart, a precise combing. When she looked to left or right, the raking went off to infinity, the lines sharp, their geometry perfect. And when she looked ahead, the lines receded to the horizon, as far as she could see undisturbed in their precision.

Those two cones stood, side by side, almost like termite hills. The shallow light fell on them gracefully. She saw that the lines on the ground curved to wash around the cones, like a stream diverting around islands of geometry. The curvature was smoothed out, subtly, so that after 20 or 30 of the lines the straightness was restored.

"Thank you for respecting the garden."

Jumping at the sudden voice, she turned.

A figure was standing there — man or woman? A man, she decided, shorter and slimmer than she was, in a shabby, much-patched suit, the visor so scarred it looked as if it dated back to Apollo 11.

He bowed. "Sumimasen. I did not mean to startle you."

"Takomi?"

"And you are Xenia Makarova."

"You know that? How?"

A gentle shrug. "I am alone here, but not isolated. Only you sought and compiled information on the Moon flowers."

"What flowers?"

He walked toward her. "This is my garden," he said. "It is based on one that once graced the Daisen-In Temple, at Kyoto, Old Japan. Although this is somewhat larger, at 50 square miles."

"A zen garden."

"You understand that? Good. This is a *kare sansui*, a waterless stream garden."

"Are you a monk?"

"I am a gardener."

"I have thought several times that the Japanese character is suited to the stillness of the Moon. Calmness and continuity. Even before humans came here, the Moon was already like an immense zen garden, a garden of rock and soil."

"Then you are wise."

"Is that why you came here? Why you live alone like this?"

"Perhaps. I prefer the silence and solitude of the Moon to the bustle of the human world. You are Russian?"

"Yes."

"Then you are alone here also. There are some of your people in the asteroid belt."

"I know. They won't respond to my signals."

"No," he said.

She pointed. "I understand the ridges represent flow. Are those mountains? Are they rising out of cloud, or sea? Or are they diminishing, shrinking back into ..."

"Does it matter? The cosmologists tell us that there are many time streams. Perhaps time is an illusion, in fact."

"Like the lines in the regolith."

"You have traveled far to see me. I will give you food and drink."

"Thank you."

He turned and walked across the Moon. After a moment, she followed.

Continued on page 51



HE ABANDONED LUNAR BASE, CALLED EDO, WAS A cluster of concrete components: habitation modules, power plants, stores, manufacturing facilities, half-buried in the cratered plain. Comms masts sprouted like flowers. An old suborbital tug pad was a splash of scorched Moon dust concrete a couple of miles out. Around the station itself, the regolith was scarred by decades of tractor traffic. There were robots everywhere but they were standing silent, obviously inert. Their paintwork was yellowed, blistered. A faded *hi-no-maru*, a Japanese Sun flag, was fixed to a pole.

Edo looked ugly, cramped and confined, compared to the sunlit green bubbles of the Copernicus Triangle.

This had been the primary settlement established by the Japanese government in the 21st century. But Kawasaki Heavy Industries had set up in Landsberg, using the crater originally as a strip-mine. Now, hollowed out, Landsberg was the capital of this new Japan, and Edo, cramped and primitive, was abandoned.

Landsberg represented the triumph of Kawasaki Heavy Industries. But that triumph had been built on Kawasaki's partnership with the alien Prion, and nobody knew what the long-term price of that may be.

Still, Landsberg had meant the abandonment of Edo. But now a single lamp burned again at the center of the complex.

Takomi lived at the heart of old Edo, in what had once been, he said, a park, grown inside a cave dug in the ground. The buildings here were dark, gutted, abandoned. There was even, bizarrely, a McDonald's, stripped out, its red and yellow plastic signs cracked and faded.

A single cherry tree grew, its leaves bright green, a single splash of color against the drab gray of the concrete, fused regolith, and Moon dust here.

He brought her green tea and rice cake. Out of his suit Takomi was a small, wizened man; he might have been 60, but such was the state of life-extending technology it was hard to tell. His face was round, a mass of wrinkles, and his eyes lost in leathery folds; he spoke with a wheeze, as if slightly asthmatic.

"You cherish the tree," she said.

He smiled. "I need one friend. I regret you have missed the blossom. I am able to celebrate *ichi-buzaki* here. We Japanese like cherries; they represent the old Samurai view, that the blossom symbolizes our lives, here in our tents on the Moon, beautiful but fragile and all too brief."

"I don't understand how you can live here. You have no external support."

"The Moon supports me," he said.

"But —"

"It is a whole world," he said gently.

Takomi used the lunar soil for simple radiation shielding. He baked it in crude microwave ovens to make ceramic and glass. He extracted oxygen from the lunar soil by magma electrolysis: melting the soil with focused sunlight, then passing an electric current through it to liberate the oh-two. The magma plant, lashed up from decades-old, salvaged components, was slow and power-intensive, but electrolysis was efficient in its use of soil; Takomi said he wasn't short of sunlight, but the less haulage he had to do the better.

He took Xenia outside and showed her what he called a "grizzly," an automated vehicle already a century old, so caked with dust it was the same colour as the Moon. The grizzly toiled patiently across the surface of the Moon, powered by sunlight, scraping up loose surface material and pumping out glass sheeting and solar cells, just a couple of square yards a day.

He took her to a rise to show her the extent of the solar farm the grizzly had built. It covered square miles, and produced megawatts.

"It is astonishing, Takomi."

He cackled. "If one is modest in one's request, the Moon is generous."

"But even so, you lack essentials. It's the eternal story of the Moon. Carbon, nitrogen, hydrogen —"

"Of course it is possible to derive many elements from the regolith. Solar wind gases may be driven off simply by heating the dust." He smiled at her. "However, I admit I cheat."

"Cheat?"

"The concrete of this abandoned town is replete with water. A pleasing paradox: volatiles brought here, scooped from Earth's atmosphere by people of a richer age, used to build, and then abandoned. And yet here they are, ready for my use."

"You mine the concrete?"

"It is better than paying water tax."

"I suppose it is. But even so —"

"And I have other friends here."

"What friends?"

He would not answer.

Disoriented, walking beside this strange, dusty man through his gloomy caverns, she found her mind making unaccustomed intuitive leaps.

She asked him about the contrails she had seen, their convergence on this place. He evaded her questions, and began to talk about something else.

"I conduct research, you know, of a sort. There is a science station, not far from here, which was once equipped by Kawasaki Heavy Industries. Now abandoned, of course. It is — was — an infrared study station. It was there, some centuries ago, that a Japanese researcher called Nemoto first discovered evidence of Prion activity in the solar system, and so changed history."

She grunted. "There should be a plaque," she said dryly.

"The station was abandoned. But the equipment is operational, still."

She wasn't interested in Takomi's hobby in some abandoned observatory. But there was something in his voice that made her keep listening.

"So you use the equipment," she prompted.

"I watched, for instance, the approach of the comet. From here, some aspects of it were apparent that were not visible from Near-side stations. The geometry of the approach orbit, for example ... and something else."

"What?"

"I saw evidence of methane burning," he said. "Close to the nucleus."

"Methane?"

"A jet of combustion products."

A rocket. She saw the implications immediately. Somebody had stuck a methane rocket on the side of the comet nucleus, burned the comet's own chemicals, to divert its course.

WALKING BESIDE THIS STRANGE, DUSTY MAN
THROUGH HIS GLOOMY CAVERNS, SHE FOUND HER
MIND MAKING UNACCUSTOMED INTUITIVE LEAPS.

Away from the Moon? Or — toward it?

And in either case, who? A friend of the Lunar Japanese, of every one on the Moon, or an enemy?

"... Why are you telling me this?"

But he would not reply, and a cold, hard lump of suspicion began to gather in her gut.

TAKOMI PROVIDED A BED FOR HER, A THIN MATTRESS in an abandoned schoolhouse. Children's paintings — of flowers and rocks and people floating in a black sky — adorned the walls, preserved under a layer of glass.

In the middle of the night, Frank called her.

She used her visor as a softscreen imager to see him. He was excited. The Roughneck bore had passed the crust's lower layers, and was in the mantle.

The mantle of the Moon: a place unlike any other reached by humans before.

When the Moon formed, five billion years in the past, it was covered by an ocean of liquid rock. The lighter materials, such as plagioclase, floated up to make the crust, and the heavier stuff, olivine and pyroxene, drifted down to form the mantle. There had been some intrusion from below since then — magnesium-suite rockbergs pushing up into the crust — but the mantle, cloaking this small world, had become essentially static, the last convection currents freezing in place.

Conditions for the drilling engineers were gentle, comparatively.

There was a temperature rise of maybe 12 degrees per mile of depth, compared to four times that on Earth. The pressure scaled similarly; even now Frank's equipment was subject only to a few kilobars, less than could be replicated in the laboratory. The Moon was *much* easier to deep-mine than the Earth ...

"It's going better than we thought, better than we expected. The Moon really is still and old and static, and we're just sinking in. Anyhow it's great TV. Smartest thing I ever did was to insist we dump the magnesium alloy piping, make the walls transparent so you can see the rocks ..."

She tried to ask him technical questions, how they were planning to cope with the more extreme pressures and temperatures they would soon encounter.

"Xenia, it doesn't matter. You know me. I can't figure any machine more complicated than a screwdriver. And neither can our investors. But they know, and I know, that we don't *need* to know. We just have to find the right technical-type guys, give them a challenge they can't resist, and point them downward."

"Paying them peanuts the while."

He grinned. "That's the beauty of those vocational types. Christ, we could even charge those guys admission. No, the technical stuff is piss-easy. The unreconstructed capitalist, if he wants to survive, takes primary account of the other factors. We have to make the project appeal to more than just the fat financiers and the big corporations."

"More?"

"Sure. Xenia, you have to think big. This is the greatest lunar adventure since Neil and Buzz. That party when we first made hole was just the start. I want everybody involved, and everybody paying. Now we're in the mantle we can market the TV rights —"

"Frank! They don't have TV any more."

"Whatever. I want the kids involved, all those little dark-eyed kids I see flapping around the palm trees the whole time with nothing to do. I want games. Educational stuff. Clubs to join, where you pay a couple of one-yen for a badge and get some kind of share certificate. I want little toy derricks in cereal packets ..."

"They don't have cereal packets."

He eyed her. "Work with me here, Xenia. And I want their parents paying too. Tours down the well, at least the upper levels."

"Are you serious?"

"Sure I'm serious. Why do you think I've got the bore 10 feet wide with glass walls? Xenia, for the first time the folks on this damn Moon

are going to see some hint of an expansive future. A frontier, beneath their feet. They have to want it. Including the kids." He nodded. "Especially the kids. I'm thinking long term, Xenia."

"But the Grays —"

"Screw the Grays. We have the kids. They have rocks."

"Maybe you should be focusing on the short term. You have investors, Frank."

"The payoff will be immense. We just have to keep hammering that home. I want the best geologists on the Moon down that well, Xenia. I want seismic surveys, geochemistry, geophysics, the works. The sooner we find some lode to generate payback, the better ..."

And so on, on and on, his insect voice buzzing with plans, in the ancient stillness of Farside.

TAKOMI WALKED HER BACK TO HER TRACTOR, BY THE zen garden. She had been here 24 hours. The Sun had dipped closer to the horizon, and the shadows were long, the land starker, more inhospitable. Comet-ice clouds glimmered high above.

"I have something for you," Takomi said. And he handed her what looked like a sheet of glass. It was oval-shaped, maybe a foot long. Its edges were blunt, as if melted; and it was covered with bristles.

Some kind of lunar geologic formation, she thought. A cute souvenir; Frank might like it for the office.

She said, "I have nothing to give you in return."

"Oh, you have made your *okurimono* already."

"I have?"

He cackled. "Your shit and your piss. Safely in my reclamation tanks. On the Moon, shit is more precious than gold — the most precious gift of all. Don't you know that?"

He bowed, once, then turned to walk away, along the rim of his rock garden.

She was left looking at the oval of Moon glass in her hands.

It looked, she thought now, rather like a flower petal.

BACK AT LANDSBERG, SHE GAVE THE PETAL-LIKE object to the only scientist she knew, Mariko Nishizaki, for analysis. Mariko was exasperated; as Frank's chief scientist she was under immense pressure, as Roughneck picked up momentum. But she agreed to pass on the puzzling fragment to a colleague, better qualified. Xenia agreed, provided she used only people in the employ of one of Frank's companies.

Meanwhile, discreetly, from home, Xenia repeated Takomi's work on the comet. She searched for evidence of the anomalous signature of methane burning.

It had been picked up, but not recognized, by many sensors.

Takomi was right.

Clearly, someone had planted a rocket on the side of the comet, and deflected it from its path. It was also clear that most of the burn had been on the far side of the Sun, where it would be undetected.

The burn had been long enough, she estimated, to have deflected the comet to *cause* its lunar crash. Undeflected, it would surely have sailed by, spectacular but harmless.

She then did some checks of the tangled accounts of Frank's companies.

She found places where funds had been diverted. Resources secreted. A surprisingly large amount, reasonably well concealed.

She'd been cradling a suspicion since Edo. Now it was confirmed, and she felt only disappointment at the shabbiness of the truth.

She knew that Takomi wouldn't reveal the existence of the rocket on the comet. He simply wasn't engaged enough in the human world to consider it. But she knew that, such was the con-

tinuing focus of attention on Fracastorius, Takomi wouldn't be the only observer who would notice the trace of that diverting rocket, follow the evidence trail.

The truth would come out.

Without making a decision on how to act on this, she went back to work with Frank.

THE PRESSURE ON XENIA, ON BOTH OF THEM, WAS immense and unrelenting.

Frank seemed to be finding it hard to cope, and it brought him little joy.

After one gruelling 20 hour day, she slept with him. She thought it would relieve the tension, for both of them. Well, it did, for a brief oceanic moment. But

then, as they rolled apart, it all came down on them again.

Frank lay on his back, eyes fixed on the ceiling, jaw muscles working, restless, tense.

There was no prospect of sleep. All she could offer him was talk.

"*Ya nye panimayoo*," she said. "I still don't understand, Frank."

"Huh?"

"You're pushing Roughneck because you want to future-proof the Moon. Terraform it, if you have to. But you pitch it to your investors as a mining venture with short-term payoffs."

"Sure. But I know my quarry, Xenia. Those people are politicians and businesstypes. That is, they're a bunch of crooks, charlatans, and madmen. That side of human nature hasn't changed since 1970. They're like me."

No, they're not, she thought.

"What they care about is profit in the here and now. If I talk about terraforming I'll scare them off."

"But once you've dug your hole —"

"— Once I've dug my hole, and all those lovely volatiles are just gushing out onto the surface, the longer term implications are going to be obvious to everyone." He looked thoughtful. "Of course just having the volatiles won't solve all the problems. You'll have the issue of the Moon's long day-night cycle, for instance. Even an atmosphere as thick as Earth's would freeze out every two weeks, on the dark side. And you'd have huge winds, forever sweeping around the terminator."

"Mirrors," she said. "Suspended over the dark side. Stop everything from freezing."

He nodded, approving. "But mirrors are complicated; you'd need a space-going infrastructure to maintain them. No, the real solution is to spin up the Moon."

She goggled. "Spin it up? How the hell —"

He grinned in the dim light. "How do I know? There's more. We might want to move the Moon away from Earth altogether. What use is Earth now? It will only cause 60-foot tides, on a terraformed Moon, and slow up the spin again. To hell with that. Let's pick an orbit of our own — maybe 60 degrees ahead of Earth. You don't know how we'll do that? Neither do I. When the time comes we'll hire the technical types again, and pay them more peanuts." He frowned. "Of course, it's important we do this now. The next few decades, I mean."

"Why? The leaky resource loops in the domes?"

"Not just that. Xenia, this is a low-gravity, low-pressure environment. There's less oxygen per lungful than on Earth."

"So what?"

"So, low gravity and low oxygen breeds big, slow, docile people. On the Moon, you don't even have to be smart enough to react fast when you fall out of your tree."

"You're saying that living on the Moon is breeding dumb people? That's just prejudice, Frank."

He shrugged. "Take a look at the schools' databases if you want to verify it. Look at the Grays. Anyhow there's a perspective beyond that, even."

"Frank, you've already terraformed the Moon, spun it up and moved it, and saved the inhabitants from losing their intelligence.

How much further can you go?"

"Well, think about it," he whispered. "Earth is an unusual planet. Maybe unique. Life has spent four billion years making it the way it is. The Moon, on the other hand, is mundane. There must be billions of little rocky worlds just like this, scattered through the galaxy. More Moons, not more Earths. So if we can learn to live on the Moon, we can live *anywhere*. The human race will be immortal."

"Sometimes you scare me, Frank."

"I know. I think big. That's why you love me."

No, she thought. That is why you fascinate me. You really would save the world by destroying it.

I will never comprehend you, she thought.

They fell silent, without sleeping.

A little later Mariko Nishizaki called Xenia. She had preliminary results about the glass object from Edo. Xenia took the call in her *tokonoma*, masking it from Frank.

"The object is constructed almost entirely of lunar surface material. Specifically, glass made of —"

"Almost?"

"There are also complex organics in there. We don't know where they came from, or what they are for. There is water, too, sealed into cells within the glass. The structure itself acts as a series of lenses, which focus sunlight. Remarkably efficient. There seems to be a series of valves on the underside that draw in particles of regolith. The grains are melted, evaporated, in the intense focused sunlight. It's a pyrolysis process similar to —"

"What happens to the vaporized material?"

"There is a series of traps, leading off from each light-focusing cell. The traps are maintained at different temperatures by spicules — the fine needles protruding from the upper surface — which also, we suspect, act to deflect daytime sunlight, and conversely work as insulators during the long lunar night. In the traps, at different temperatures, various metal species condense out. The structure seems to be oriented toward collecting aluminum. There is also an oxygen trap farther back."

Aluminum and oxygen. Rocket fuel, melting out of the lunar rock, inside the glass structure, by the light of the Sun.

Mariko was continuing with her analysis, and promised to keep Xenia informed.

Xenia returned to bed. Frank seemed to be asleep.

She thought over her relationship with him.

She had a choice to make. Not about the comet issue; others would unravel that, in time. About Frank, and herself.

He fascinated her, true. He was a man of her own time, with a crude vigor she didn't find among the Japanese-descended colonists of the Moon. He was the only link she had with home. The only human on the Moon who didn't speak Japanese to her.

Maybe he reminded her of her father. That, as far as she could tell, was all she felt.

In the meantime, she must consider her own morality.

Laying beside him, she made her decision.

She wouldn't betray him. As long as he needed her, she would stand with him.

But she would not save him.

THE NEXT MORNING, MARIKO CALLED XENIA AGAIN. "The results are back. About the organics. You ought to come see this ..."

Mariko worked in what seemed like a typical geology lab, to Xenia: rocks and dust samples everywhere, in boxes and trays and on shelves, benches bearing anonymous analysis equipment. Some of the more pristine samples were being handled in sealed glove boxes. There was a persistent smell of wood smoke: the scent of fresh Moon dust, Xenia knew.

Mariko had set out the glass petal on a cleared bench. The petal had been partially dissected.

"I did not believe what my friend told me," Mariko said. "Therefore I had him bring his subsample and his results here and repeat his analysis."

"Is it so surprising?"

"To me, yes. But you must remember I am a geologist. My contact works with biochemists and biologists, and they are extremely excited."

Biologists?

Xenia sat down. "You'd better tell me."

Mariko consulted notes in a softscreen.

"Within this structure the organic chemicals serve many uses. A species of photosynthesis, for instance. A complex chemical factory appears to be at work here. There is evidence of some kind of root system, which perhaps provides the organics in the first place, ... But, there is no source we know of. This is the *Moon*." She looked confused. "Xenia, this is essentially a vapor-phase reduction machine of staggering elegance of execution, mediated by organic chemistry. It must be an artifact. And yet it looks —"

"What?"

"As if it grew, out of the Moon ground. There are many further puzzles," Mariko said, "for instance, the evidence of a neural network."

"What?"

"Some of the organics —"

"Are you saying this has some kind of a nervous system?"

Mariko shrugged. "I am not a biologist. But still, if this is some simple lunar plant, why would it need a nervous system?" She blinked. "Even, perhaps, a rudimentary awareness." She studied Xenia. "What is this thing?"

"I can't tell you that." She picked up the sample. "Not yet. Sorry."

Mariko walked with her to the door. "There has been much speculation about the form life would take, here on the Moon. But volatile depletion seemed an unbeatable hurdle. Is it possible —"

"Mariko, I can't tell you any more."

Mariko pursued her. "How could life originate, here on the Moon? And, more fundamentally, where did it get its organic material? Was it from the root structure, from deep within the Moon? If so, you realize that this is confirmation of my hypotheses about the volatiles in —"

Xenia stopped. "Mariko. This isn't to go further. News of this ... discovery. Not yet. Tell your colleagues that too."

Mariko looked shocked, as Xenia, with weary certainty, had expected. "You want to *suppress* this? But this could be ..."

"The discovery of the age. Life on the Moon. I know."

"More than that. Even our engineers could learn so much by studying the processes at work here."

"But this isn't science, Mariko. I don't want anything perturbing the project."

Mariko made to protest again.

"Read your contract," Xenia snapped, and walked out, carrying the petal.

Life was long, slow, unchanging.

Even her thoughts were slow.

In the timeless intervals between the comets, her growth was chthonic, her patience matching that of the rocks themselves. Slowly, slowly, she rebuilt her strength: Light traps to start the long process of drawing out fire for the next seeds, leaves to catch the comet Rain that would come again.

She spoke to her children, their subtle scratching carrying to her through the still, cold rock.

Their conversations lasted a million years. It was important that she taught them: how to grow, of the comet Rains to come, of the Giver at the beginning of things, the Merging at the end.

The Rains were spectacular, but infrequent. But when they came, once or twice in every billion years, her pulse accelerated, her metabolism exploded, as she drank in the thin, temporary air, and dragged the fire she needed from the rock.

And, with each Rain, she birthed again, the seeds exploding from

her body and scattering around the Land.

But, after that first time, she was never alone. She could feel, through the rock, the joyous pulsing of her children as they hurtled their own seed through the gathering comet air.

Soon there were so many of them that it was as if all of the Land was alive with their birthing, its rocky heart echoing to their joyous shouts.

And still, in the distant future, the Merging awaited them.

As the comets leaped one by one back into the sky, sucking away the air with them, she held that thought to her exhausted body, cradling it.

E

IGHTY DAYS IN AND FRANK WAS STILL MAKING HOLE AT his mile-a-day pace. But things had started to get a lot harder.

This was mantle, after all. The rock was like stretched wire, under so much pressure it exploded when it was exposed. It was a new regime. New techniques were needed.

Costs escalated.

The pressure on Frank to shut down was intense.

Many of his investors had already become extremely rich from the potential of the rich ore lodes discovered in the lower crust and upper mantle. There was talk of opening up new, shallow bores elsewhere on the Moon. Frank had proved his point. Why go farther, when the Roughneck was already a commercial success?

But that wasn't Frank's dream, of course. Metal ore wasn't his goal, and he wasn't about to stop now.

He lost some investors. For now at least he was able to sustain a sufficient coalition to maintain the project. Xenia was becoming worried at the funds he was ploughing back into the drilling himself, however.

... That was when the first death occurred, all of 70 miles below the surface of the Moon.

S

HE FOUND HIM IN HIS OFFICE AT NEW DALLAS, PACING back and forth, an Earthman caged on the Moon, his muscles lifting him off the glass floor.

"Omelettes and eggs," he said. "Omelettes and eggs."

"That's a cliché, Frank."

"It was probably the Grays."

"There's no evidence of sabotage."

He paced. "Look, we're in the *mantle* of the Moon —"

"You don't have to justify it to me," she said, but he wasn't listening.

"The mantle," he said. "You know, I hate it. Four hundred miles of worthless shit we have to dig through just to get to the good stuff down below."

"The primitive material?"

"Yeah. Primeval treasure, waiting for us since the birth of the solar system. But first we have to get through the *mantle*."

"It was the change over to the subterrene that caused the disaster. Right?"

He ran a hand over his gleaming scalp. "If you were a prosecutor, and this was a court, I'd challenge you on 'caused.' The accident happened when we switched over to the subterrene, yes."

They had already gone too deep for the simple alloy casing, or the cooled lunar glass Frank had replaced it with; to get through the mantle they would use a subterrene, a development of obsolete deep-mining technology, a probe that melted its way through the rock and built its own casing behind it, a tube of hard, high-melting-point quasiglass.

Frank started talking, rapidly, about quasiglass. "It's the stuff the Lunar Japanese use for rocket nozzles. Very high melting point. It's based on diamond, but it's a quasicrystal, so the lab boys tell me, halfway between a crystal and a glass. They build it with some kind of nano technique, molecule by molecule ..."

"Like a Penrose tiling," she said.

"Yes," he said, looking surprised she understood. "Harder than ordinary crystal because there are no neat planes for cracks and defects to propagate. And it's a good heat insulator similarly. If not for quasiglass this bore would be as ragged as any in a Texas oil field, just lengths of pipe packed in with cement ... Besides that we support the hole against collapse and shear stress. Rock bolts, fired through the casing and into the rock beyond. We do everything we can to ensure the integrity of our structure —"

This was, she realized, a first draft of the testimony he would have to give to the investigating commissions.

When the first subterrene started up it built a casing with a flaw, undetected for a hundred yards.

There had been an implosion. They lost the subterrene itself, a half-mile of bore — and a single life, of a senior toolpusher.

"We've already restarted," Frank said. "A couple of days and we'll have recovered. The overall schedule loss —"

"Frank, this isn't a question of schedule loss. It's the wider impact. Public perception. Come on; you know how important this is. If we don't handle this right we'll be shut down."

He seemed reluctant to absorb that. He was silent, for maybe half a minute.

Then his mood switched. He brightened. "Hell, you're right. You know, we can leverage this to our advantage."

"What do you mean?"

"We need to turn this guy we lost — what was his name? — into a hero." He snapped his fingers. "Did he have any family? Find out. A 10-year-old son would be perfect, but we'll work with whatever we have. Get his kids to drop cherry blossom down the hole. You know the deal. The message has to be right. *The kids want the bore to be finished, as a memorial to the brave hero.*"

"Frank, the dead engineer was a she."

"And we ought to think about the Gray angle. Get one of them to call that toolpusher a criminal."

"Frank —"

He faced her. "You think this is immoral. Right?"

"Well —"

"Bullshit," he said. "It would be immoral to stop; otherwise, believe me, everyone on this Moon is going to die in the long run. Why do you think I asked you to set up the kids' clubs and schemes?"

"For *this*?"

"Hell, yes. Already I've had some of those chicken-livered investors try to bail out. Now we use the kids, to put so much pressure on them it's impossible for them to turn back. If that toolpusher had a kid in one of our clubs, in fact, that's perfect."

"Frank —"

He eyed her and pointed a stubby finger at her face. "This is the bottleneck. Every project goes through it. We need to get through it, is all. I need to know you're with me on this, Xenia."

She held his gaze for a couple of seconds, then sighed. "You know I am."

He softened, and dropped his hands. "Yeah. I know." But there was something in his voice, she thought, that didn't match his words. An uncertainty that hadn't been there before. "Omelettes and eggs," he muttered. "Whatever." He clapped his hands. "So. What's next?"

This time, Xenia didn't fly directly to Edo. Instead she programmed the hopper to make a series of slow orbits of the abandoned base.

It took her an hour to find the glimmer of glass, reflected sunlight sparkling from a broad expanse of it, at the center of an ancient, eroded crater.

She landed a half-mile away, eager to avoid disturbing the structure. She suited up quickly, clambered out of the hopper, and set off on foot.

Pocked regolith slid smoothly toward her feet, over the close horizon. She made ground quickly, in this battered, ancient landscape, restrained only by the Moon's gentle gravity.

Soon the land ahead grew bright, glimmering like a pool. She slowed, approaching cautiously.

The flower was larger than she had expected. It must have cov-

ered an acre or more, delicate glass leaves resting easily against the regolith from which they had been constructed, spiky needles protruding. There was, too, another type of structure: short, stubby cylinders, pointing at the sky, projecting in all directions.

Miniature cannon muzzles. Launch gantries for aluminum-burning rockets, perhaps.

"... I must startle you again."

She turned. It was Takomi, of course: in his worn, patched suit, his hands folded behind his back. He was looking at the flower.

"Life on the Moon," she said.

"Its life-cycle is simple," said Takomi. "The flower is exposed to sunlight, through the long Moon day. Each of its leaves is a collector of sunlight. The flower focuses the light on regolith, and breaks the soil down to the components it needs to manufacture its own structure, its seeds, and the simple rocket fuel used to propel them across the surface."

"Then, during the night, the leaves act as cold traps. They absorb the comet frost that falls on them, water and methane and carbon dioxide, incorporating that, too, into the flowers' substance."

"And the roots?"

"The roots are miles long. I don't know how long. They tap deep wells of nutrient, water and organic substances. Deep inside the Moon."

So Frank, of course, was right about the volatiles, as she had known.

Takomi said now, "This is how the Moon feeds me. I have found a way to tap into those roots, extract the deep nutrients. My needs are modest. It does not damage the plant — although the plant is already withering."

"What? ... I suppose you despise Frank Paulis."

He said mildly, "Why should I?"

"Because he is trying to dig out the sustenance for these plants. Rip it out of the heart of the Moon. Are you a Gray, Takomi?"

He shrugged. "We have different ways. My way is —" he stretched his hands — "this. To live off the land, off the Moon. I need little to sustain me, and that little the Moon provides. And I have all the stillness I need."

"But how many humans could the Moon support this way?"

"Ah. Not many. But how many humans does the Moon need?" He studied her. "Your people have a word. *Mechta*."

"Dream." It was the first Russian word she had heard spoken in many months.

"It was the name your engineers wished to give to the first probe they sent to the Moon. *Mechta*. But it was not allowed, by those who decide such things."

"Well, I am living a dream, here on the Moon, a dream of rock and stillness, here with my Moon flower. That is how you should think of me."

He smiled, and walked away.

The Land was rich with life now:

her children, her descendants, drinking in air and Light. Their songs echoed through the core of the Land, strong and powerful.

But it would not last, for it was time for the Merging.

First there was a sudden explosion of Rains, too many to count, the comets leaping out of the ground, one after the other.

Then the Land itself became active. Great sheets of rock heated, becoming liquid, and withdrew into the interior of the Land.

Many died, of course. But those that remained bred frantically. It was a glorious time, a time of death and life.

Changes accelerated. She could feel huge masses rising and falling in the molten interior. The Land grew hot, dissolving into a deep ocean of liquid rock. She clung to the thin crust that contained the world.

And then the Land itself began to break up, great masses of it hurtling themselves into the sky, so that soon the Land was surrounded by a glowing cloud of fragments.

More died.

But she was not afraid. It was glorious! — as if the Land itself was birthing comets, as if the Land were like herself, hurling its children far away.

The end came swiftly, more swiftly than she had expected, in an explosion of heat and light that burst from the heart of the Land itself. The last, thin crust was broken open, and suddenly there was no more Land, nowhere for her roots to grip.

It was the Merging, and it was glorious

III. THE TUNNEL INTO THE MOON

FRANK J PAULIS AND XENIA MAKAROVA, WRAPPED IN THEIR SPIDER-web spacesuits, stood on a narrow aluminum bridge. They were under the South Pole derrick, and suspended over the tunnel Frank had dug into the heart of the Moon.

The shaft below Xenia was a cylinder of sparkling lunar glass. Lights had been buried in the walls every few yards, so the shaft was brilliantly lit, like a shopping mall passageway, the multiple reflections glimmering from the glass walls. Refrigeration and other conduits snaked along the tunnel.

It was vertical, perfectly symmetrical, and there was no mist or dust, nothing to obscure her view. The tunnel receded to the center of the Moon, to infinity. Momentarily dizzy, she stepped back, anchored herself again on the surface of the Moon.

The area around the derrick had long lost its pristine theme-park look. There were piles of spill and waste and ore, dug out of the deepening hole in the ground. LHDs, automated load-haul-dump vehicles, crawled continually around the site. The LHDs were baroque aluminum beetles with broad fenders, and most of their working parts were six feet or more off the ground, where sprays of the abrasive lunar dust wouldn't reach. They sported giant fins to radiate off their excess heat; no conduction or convection to transfer heat here. The LHDs, she realized, were machines made for the Moon ...

Frank, excited, oddly nervous, started telling her how even the subterranean technology hadn't been resistant enough when they got through the mantle, four hundred miles deep, and the temperature climbed toward a thousand degrees. The drill could only penetrate farther by having high-velocity water flashed ahead of it so that the bore was constantly contained by a finger of chilled rock, bringing the temperature down to a bearable level —

The lights, here at the South Pole pit head, were bright, and Xenia couldn't see Frank's face within his visor.

He rubbed his hands. "It's wonderful. Like the old days. Engineers overcoming obstacles, building things."

"And," she said, "thanks to all this stuff, we got through the mantle."

"Hell, yes, we got through it. You've been away from the project too long, Xenia. We got through all that shit to the deep interior. The primitive material. And —"

"Yes?"

He took her hands. Squat in his suit, his face invisible, he was still, unmistakably, Frank J Paulis.

"And now, it's our time."

"What are we going to do?"

She could hear his smile. "Trust me."

Without hesitation — he never hesitated — he stepped to the lip of the delicate metal bridge. She walked with him, a single step. A stitched safety harness, suspended from pulleys above, impeded her.

He said, "Will you follow me?"

She took a breath. "I've followed you so far."

"Then come."

Hand in hand, they jumped off the bridge.

LOW AS A SNOWFLAKE, TUGGED BY GRAVITY, XENIA fell toward the heart of the Moon.

The loose harness dragged gently at her shoulders and crotch, slowing her fall. She was guided by a couple of spider-web cables, tautly threaded down the axis of the shaft; through her suit's fabric she could hear the hiss of the pulleys.

Xenia could hear her heart pound. She looked down. There was nothing beneath her feet save a diminishing tunnel of light.

Frank was laughing.

The depth markers on the wall were already rising past her, mapping her acceleration. But she was suspended here, in the vacuum, as if she were in orbit; she had no sense of speed, no vertigo from the hole beneath her.

Once she would have been terrified by such an experience. But she seemed to have lost her monkey instincts. There were rumors that Saddle Point gateway transitions did that to you. Or perhaps this place, this monstrous Moon tunnel of Frank's, was simply too strange to comprehend.

Their speed picked up quickly. In seconds, it seemed, they had already passed through the fine regolith layers, the Moon's pulverized outer skin, and were sailing down through the megaregolith. Giant chunks of deeply shattered rock crowded against the glassy, transparent tunnel walls like the corpses of buried animals.

Frank was watching her. "Don't touch that guide wire."

"I won't."

"These Japanese suits are smart technology, but we're already moving so fast the wire would take your arm off. But it isn't so bad; even freefalling, our speed would only reach a mile a second by the time we hit the center of the Moon. Gravity falls off as you descend, you see" He looked down, at the convergent emptiness beneath their boots. "Anyhow the pulleys will slow us. A hell of a ride, isn't it?"

"Yes"

The material beyond the walls had turned smooth and gray now. This was lunar bedrock, anorthosite, buried beyond even the probings and pulverizing of the great impactors. Unlike Earth, there would be no fossils here, she knew, no remnants of life in these deep levels; only a smooth gradation of minerals, processed only by the slow workings of geology.

Despite the gathering warmth of the tunnel, despite her own acceleration, she had a sense of cold, of age and stillness.

In some places there were levels, side shafts dug away from the main exploratory bore. They led to stopes, lodes of magnesium-rich rocks, plugs of deep material that had been extruded long ago from the Moon's frozen interior, and were now being mined out by Frank's industry partners. She saw the workings as complex blurs, hurrying upward as she fell, gone like dream visions.

They dropped through a surprisingly sharp transition into a new realm, where the rock on the other side of the walls glowed, of its own internal light. It was a dull gray-red, like a cooling lava on Earth.

"The mantle of the Moon," Frank whispered, gripping her hands. "Basalt. Up here it ain't so bad. But farther down the rock is so soft it pulls like taffy when you try to drill it. Four hundred miles of mush, a pain in the ass."

As he talked they passed a place where the glass walls were marked with an engraving, stylized flowers with huge lunar petals. This was where a technician had lost her life, in an implosion. The little memorial shot upward and was lost in the light. Frank didn't comment.

The rock was now glowing a bright cherry-pink, rushing upward past them.

Falling, falling. Like dropping through some immense glass tube full of fluorescing gas. Xenia sensed the heat, despite her suit's insulation and the refrigeration of the tunnel.

Thick conduits surrounded them now, crowding the tunnel, flipping from bracket to bracket. The conduits carried water, bearing the Moon's deep heat to the hydrothermal plants on the surface.

Now they passed through another transition, signaled by a wide wall marking, this one undetectable to eyes that were becoming dazzled by the pink-white glare of the rocks.

The harness tugged at her sharply, slowing her. Looking down along the forest of conduits, she could see that they were approaching a terminus, a platform of some dull, opaque ceramic that plugged the tunnel.

"End of the line," Frank said. "Down below there's only the down-hole tools and the casing machine and other junk. ... Do you know where you are? Xenia, we're five hundred miles deep, half-way to the center of the Moon. ..."

She glanced at her chronometer patch. It had taken 20 minutes.

The pulleys gripped harder and they slowed, drifting to a halt a couple of feet above the platform. With Frank's help she loosened her harness and spilled easily to the platform itself, landing on her feet, as if after a sky-dive.

She caught her balance, and looked around.

The platform was crowded with science equipment, anonymous gray boxes linked by cables to softscreens and batteries. Sensors and probes, wrapped in water-cooling jackets, were plugged into ports in the walls. She could see data collected from the lunar material flickering over the softscreens, measurements of porosity and permeability, data from gas meters and pressure gauges and dynamometers and gravimeters. There was evidence of work here, small pressurisable shelters, spare backpacks, notepads — even, incongruously, a coffee cup. Human traces, here at the heart of the Moon.

They were alone here.

She walked to the walls. She was, she felt, almost floating.

There was primeval rock, pure and unmarked, all around her, beyond the window—like walls.

"The deep interior of the Moon," Frank said, joining her. He ran his gloved hands over the glass. "What the rock hounds call primitive material. The same stuff the asteroids are made of, left over from the solar system's formation. Never melted and differentiated like the mantle, never bombarded like the surface. Untouched since the Moon budded off of Earth itself, I guess."

"I feel light as a feather," she said. And so she did; she felt as if she was going to float back up the borehole like a soap bubble.

Frank glared up into the hundreds of miles of tunnel above them, and concentric light rings glimmered in his face plate. "All that rock up there doesn't pull at us. Not when we're down here. Just the stuff beneath our feet. It might as well be cloud, rocky cloud, hundreds of miles of it —"

"I suppose, at the core itself, you would be weightless."

"I guess."

On one low bench stood a glass beaker, covered with clear plastic film. She picked it up; she could barely feel it, dwarfed within her thick, inflexible gloves. It held a liquid that sloshed in the gentle gravity. The liquid was murky brown, not quite transparent.

She turned. Frank was grinning.

Immediately, she understood.

"I wish you could drink it," he said. "I wish we could drink a toast. You know what that is? *It's water*. Moon water, water from the lunar rocks." He took the beaker and turned around, in a slow, ponderous dance. "It's all around us. Just as Mariko predicted, a ocean of it. Wadsleyite and majorite with three percent water by weight. ... Incredible. We did it, babe."

"Frank. You were right. I had no idea."

"I sat on the results. I wanted you to be the first to see this. To see my —"

"Affirmation," she said gently. "This is your affirmation."

"Yeah. I'm a hero."

It was true, she knew.

It was going to work out just as Frank had projected, as they had mapped out in the wargaming they had done. As soon as the implications of the find became apparent — that there really were oceans down here, buried inside the Moon — the imaginations of the Lunar Japanese would be fast to follow Frank's vision. This wasn't a simple matter of plugging holes in the environment support system loops. There was enough resource here, just as Frank said, to future-proof the Moon. Not for the first time Xenia had recognized Frank's brutal wisdom in his dealings with people: to bulldoze them as far as he had

to, until they couldn't help but agree with him.

Frank would become the most famous man on the Moon.

That wasn't going to help him, though, she thought sadly.

"So," she said. "You proved your point. You found what you wanted to find. Will you stop now?"

"Stop the borehole?" He sounded shocked. "Hell, no. We go on."

"Frank, the investors are already pulling out."

"Chicken-livered assholes. I'll go on if I have to pay for it myself."

He put the beaker down. "Xenia, to hell with the water. Water isn't enough; it's just a first step. We have to go on. *We still have to find the other volatiles*. Methane. Organics —"

"But even Mariko says the theoretical basis for their existence here is shaky compared to water."

"Shaky, hell," he said angrily. "If those cosmic processes, whatever the hell they were, worked to trap the water, they'll trap the other stuff too."

His faith, in the existence of those deep chemical treasures, was strong as ever. And — *knowing she already had evidence that he was right* — she felt stabs of guilt.

But she couldn't help him now.

He was saying, "We go on. Damn it, Roughneck is my project."

"No, it isn't. We sold so much stock to get through the mantle that you don't have a majority any more."

"But we're rich again." He laughed. "We'll buy it back."

"Nobody's selling. They certainly won't after you publish this finding. You're too successful. I'm sorry, Frank."

"So the bad guys are closing in, huh. Well, the hell with it. I'll find a way to beat them. I always do." He grabbed her gloved hands. "Never mind that now. Listen, I'll tell you why I brought you down here. *I'm winning*. I found water in the Moon, just where we predicted. And as soon as we hit volatile, I'm going to get everything I ever wanted. Except one thing."

She was bewildered. "What?"

"I want us to get married. I want us to have kids. We came here together, from out of the past, and we should have a life of our own, on this Japanese Moon." His voice was heavy, laden with emotion, almost cracking. In the glare of rock light, she couldn't see his face.

She hadn't expected this. She couldn't think of a response.

"Hell," he said, and now his voice was almost shrill. "What do you say? This is the biggest moment of my life, Xenia. Of our lives. I want to share it with you, now and forever. To hell with Kawasaki, the investors. *We did this*, together. The Moon is ours. Now, what do you say?"

"The comet," she said softly.

He was silent for a moment, still gripping her hands.

"The methane rocket was detected."

She could tell he was thinking of denying all knowledge of this. Then he said:

"Who found it?"

"Takomi."

"The piss-drinking old bastard out at Edo?"

"Yes."

"That still doesn't prove —"

"I checked the accounts. I found where you diverted the funds, how you built the rocket, how you launched it, how you rendezvoused it with the comet." She sighed. "You never were smart at that kind of stuff, Frank. You should have asked me to help."

"Would you?"

"No."

He released her hands. "I never meant it to hit where it did. On Fracastorius."

"I know that. Nevertheless, that's where it did land."

He picked up the glass of lunar water. "But you know what, I'd have gone ahead even if I had known. I had to kickstart Prometheus; I needed that comet. It was the only way. You can't stagnate. That way lies extinction."

She closed her eyes. "I admire your ambition. But —"

"If I gave the Lunar Japanese a choice, they wouldn't have allowed it. They'd be sucking piss water out of old concrete for the rest of time."

"But it would be their choice."

"And that's more important?"

She shrugged. "It's inevitable they'll know soon," she said. "Where I found the false accounting, the evidence of the deflection, the authorities will follow."

He turned to her, and she sensed he was grinning again, irrepressible. "At least I finished my project. At least I got to be a hero. ... Marry me," he said again.

"No."

"Why not? Because I'm going to be a con?"

"Not that."

"Then why?"

"Because I wouldn't last, in your heart. You move on, Frank."

"You're wrong," he said. But there was no conviction in his voice. "So," he said. "No wedding bells. No little Lunar Americans, to teach these Japanese how to play pro football."

"I guess not."

He walked away. "Makes you think, though," he said, his back to her. "What?"

He waved a hand at the glowing walls. "This technology isn't so advanced. Neil and Buzz couldn't have done it, but maybe we could have opened up some kind of deep mine on the Moon by the end of the 20th century, say. Started to dig out the water, live off the land. If only we'd known it was here, all this wealth, even NASA might have done it. And then you'd have an American Moon, and who knows how history might have turned out?"

"None of us can change things."

He looked at her, his face masked by rock light. "However much we might want to."

"No."

"How long do you think I have?"

"Before —"

"Before they shut me down."

"I don't know. Weeks. No more."

"Then I'll have to make those weeks count."

He showed her how to hook her suit harness to a fresh pulley set, and they began the long, slow ride to the surface of the Moon.

Abandoned on its bench top at the bottom of the shaft, she could see the covered beaker, the Moon water within.

A

FTER HER DESCENT INTO THE MOON, SHE RETURNED to Edo, seeking stillness.

The world of the Moon, here on Farside, was simple: the regolith below, the sunlight that flowed from the black sky above. Land, light, dark. That, and herself, alone. When she looked downsun, at her own shadow, the light bounced from the dust back toward her, making a halo around her head.

The Moon flower had, she saw, significantly diminished since her last visit; many of the outlying petals were broken off or shattered.

After a time, Takomi joined her.

He said: "Evidence of the flowers has been unturned before."

"It has?"

"I have, discreetly, studied old records of the lunar surface. Another legacy of richer days past, when much of the Moon was

studied in some detail.

"But those explorers, long dead now, did not know what they had found, of course. Some of the remains were buried under regolith layers. Some of them were billions of years old." He sighed. "The evidence is fragmentary. Nevertheless I have been able to establish a pattern."

"What kind of pattern?"

"It is true that the final seeding event drew the pods, with unerring accuracy, back to this site. As you observed. The pods were absorbed into the structure of the primary plant, here, which has since withered. The seeding was evidently triggered by the arrival of the comet, the enveloping of the Moon by its new, temporary atmosphere.

"But I have studied the patterns of earlier seedings —"

"Triggered by earlier comet impacts."

"Yes. All of them long before human occupancy began here. Just one or two impacts, per aeon. Brief comet rains, spurts of air, before the long winter closed again. And each impact triggered a seeding event."

"... Ah. I understand. These are like desert flowers, which bloom in the brief rain. Poppies, rockroses, grasses, chenopods."

"Exactly. They complete their life-cycles quickly, propagate as vigorously as possible, while the comet air lasts. And then their seeds lay dormant, for as long as necessary, waiting for the next chance event, perhaps as long as a billion years."

"I imagine they spread out, trying to cover the Moon. Propagate as fast and as far as possible, like desert plants. Wherever there is suitable regolith —"

"No," he said quietly.

"Then what?"

"At every comet event, the seedings converge."

"A billion years ago there were a thousand sites like this. In a great seeding, these diminished to a mere hundred: Those fortunate few were bombarded with seeds, while the originators withered. And later, another seeding reduced that hundred to 12 or so. And finally, the 12 are reduced to one."

She tried to think that through; she pictured the little seed pods converging, diminishing in number. "It doesn't make sense."

"Not for us, who are ambassadors from Earth," he said. "Earth life spreads, colonizes, whenever and wherever it can. But this is lunar life, Xenia. And the Moon is an old, cooling, dying world. Its richest days were brief moments, far in the past. And so life has adjusted to the situation. Do you understand?"

"... I think so. But now, this is truly the last of them? The end?"

"Yes. The flower is already diminishing, dying."

"But why here? Why now?"

He shrugged. "Xenia, your colleague Frank Paulis is evidently determined to rebuild the Moon, inside and out. Even if he fails, others will follow where he showed the way. The stillness of the Moon is lost." He sniffed. "My own garden might survive, but in a park, like your old Apollo landers, to be gawked at by tourists. It is a diminishing. And so with the flowers. There is nowhere for them to survive, on the Moon, in our future."

"But how do they *know* they can't survive — oh, that's the wrong question. Of course the flowers don't know anything."

He paused, regarding her. "Are you sure?"

"What do you mean?"

"We are smart, and aggressive. We think smartness is derived from aggression. Perhaps that is true. But perhaps it takes a greater imag-

SHE FOUND PLACES WHERE FUNDS HAD BEEN
DIVERTED. A SURPRISINGLY LARGE AMOUNT,
REASONABLY WELL CONCEALED.

ination to comprehend stillness than to react to the noise and clamor of our shallow human world."

She frowned, remembering Mariko's evidence about neural structures in the flowers. "You're saying these things are *conscious*?"

"I believe so. It would be hard to prove. I have spent much time in contemplation here, however. And I have developed an intuition. A sympathy, perhaps."

"But that seems —"

"What?"

"Bleak," she said. "Unbelievably so. *Cruel*. What kind of god would plan such a thing? Think about it. You have a conscious creature, trapped on the surface of the Moon, in this desolate, barren environment. And its way of living, stretching back billions of years maybe, has had the sole purpose of diminishing itself, to prepare for this final extinction, this death, this *smert*. What is the purpose of consciousness, confronted by such desolation?"

"But perhaps it is not so," he said gently.

"What?"

"The cosmologists tell us that there are many time streams. The future of the Moon, in the direction we face, may be desolate. But not the past. So why not face *that* way?"

She remembered the *kare sansui*, the waterless stream. It was impossible to tell if the stream was flowing from past to future, or future to past; if the hills of heaped regolith were rising or sinking —

"I don't understand," she said.

"Perhaps to the flowers — to *this* flower, the last, or perhaps the first — this may be a beginning, not an end. The beginning of a journey that will end in unity, and unimaginable glory."

"*Vileekke bokh*. You are telling me that these plants are living backwards in time? Propagating — not into the future — but *into the past*?"

He touched her gloved hand. "The important thing is that you must not grieve for the flowers. They have their dream. Their *mechta*, of a better Moon, in the deep past, or deep future. The universe is not always cruel, Xenia Makarova. And you must not hate Frank, for what he has done."

"I don't hate him."

"There is a point of view from which he is not taking from the heart of the Moon, but giving. You see? Now come. I have green tea, and rice cake, and we will sit under the cherry tree, and talk further."

She nodded, dumbly, and let him take her by the hand.

Together they walked across the yielding antiquity of the Moon.

IT WAS ANOTHER CELEBRATION, HERE AT THE SOUTH POLE OF the Moon. It was the day Project Roughneck promised to fulfill its potential by bringing the first commercially useful loads of water to the surface. Once again the crowds were out, investors with their guests, families with children, huge softscreens draped over drilling gear, Observers everywhere so everyone on the Moon could see, share immediately, everything that happened here today. Even the Grays were here, to celebrate the end, dancing in elaborate formations.

Icebound Earth hovered like a ghost on one horizon.

This time, Xenia didn't find Frank strutting about the lunar surface in his Stars & Stripes spacesuit, giving out orders. Frank knew, he said, which way the wind blew, a blunt Earthbound metaphor no Lunar Japanese understood. So he had confined himself to a voluntary house arrest, in the new *ryokan* that had opened up on the summit of one of the tallest rim mountains here.

When she arrived, he waved her in and handed her a drink, a fine sake.

"This is one hell of a cage," he said. "If you've got to be in a cage —"

"Don't be frightened," she said.

He laughed darkly. "Civilized, these Lunar Japanese. Well, we'll see."

It was true that so far, while the investigation was progressing, he had been left alone. Xenia liked to think the Lunar Japanese authorities were giving Frank time and space, letting him enjoy his huge triumph, before they acted.

But perhaps that was sentimental.

After centuries of survival on the unyielding Moon, she knew there

was a hardness under the polite, civilized veneer of these Lunar Japanese. They did not suffer well those who wasted resources, or endangered the lives of others.

Not that Frank was suffering right now, at any rate. His suite was a penthouse, magnificent, decorated a mix of Western-style and traditional Japanese. One wall, facing the borehole, was just a single huge pane of tough, anhydrous lunar glass.

She saw a glass of murky water, covered over, on a table top. Moon water, his only trophy of Roughneck.

He walked her to the window.

She gazed out, goddess-like, surveying the activity. The drilling site was an array of blocky machinery, now stained deep gray by dust, all of it bathed in artificial light. The stars hung above the plain, stark and still, and people and their vehicles swarmed over the ancient, broken plain like so many spacesuited ants.

"You know, it's a great day," she said. "They're making your dream come true."

"My dream, hell." He fetched himself another slug of sake, which he drank like beer. "They stole it from me. And they're going inward. That's what Kawasaki and the rest are considering now. I've seen their plans. Huge underground cities in the crust, big enough for thousands, even hundreds of thousands, all powered by thermal energy from the rocks. You don't need the surface, any off-world resources. In 50 years you could have multiples of the Moon's present population, burrowing away busily. Hell, it would take a hundred generations to fill up the Moon that way, for there are oceans down there, my oceans, the oceans I found." He glanced at his wristwatch, restless.

"What's wrong with that?"

"But that wasn't the idea," he said heavily. "It wasn't the *point*."

"Then what *was* the point?"

"That," he said, and he looked up at frozen Earth.

"We should take on the Prion?"

"If we have to, to get Earth back. It's our planet, damn it."

"Whose? Ours? Or the Lunar Japanese? Or —"

But he wasn't listening. "If we dig ourselves into the ground, we won't be able to see the Earth, or the stars. We'll forget. Don't you see that?... " He glared at her. "We had to flee Earth once before."

"What?"

He said, "I know about the Moon flowers."

Taken aback, she said nothing.

He laughed at her discomfiture. "Of course I know about the flowers. This is my organization, Xenia. Even now, that's still true. You can't keep anything from me."

"I'm sorry if —"

"It would have been better if you'd told me. We could have worked together." He picked up the water glass. "You know what I have here, in this beaker?"

"Tell me."

"Life, Xenia. Or at least, lots of little corpses. Billions and billions of them, just in this beaker alone."

She stared at the beaker of Moon water, as if she might see what he was talking about.

"Life, from deep inside the Moon," he said. "The bio boys say there is a whole ecosystem down here. Well, there had to be. Did you think there would be just the flowers on the surface, just one species? The life is anaerobic; that is, it doesn't use oxygen. It feeds on the water and organic shit down here, and it uses heat energy to drive its metabolism. Once we dig these little guys out, the reduction in pressure destroys them. So the techs are coming up with smarter probes that can study them *in situ*. Of course it isn't native to the Moon. ..."

All this was too fast for Xenia.

"Then where —"

"Xenia, the first forms of life on Earth were like this. They didn't use free oxygen because there was none. Their metabolism was much less energetic than ours, and they pumped out a lot of undesirable by-products. But they survived nevertheless."

"When oxygen started to gather in Earth's atmosphere — one of those by-products — they choked to death on it, literally. Some survived by

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To never have traveled through time is a deficiency that can be endured.
But to have the ability to travel through time stolen from you
could drive even the strongest person mad.

MARDOONED

on the Railroad to Moscow

I start every day with a feeling of loss. Every morning when the guards awaken us, I reach for my matrix, and every morning it is still gone.

Amputees must go through the same ritual, but it can't hurt them as much. I would trade both of my legs forever to whoever would bring me back my key to traveling time. The others rise in preparation for trips to the latrine trench and then into the line for breakfast. The draft from the open door strikes me, and I curl tighter under my dirty blanket. I am 64 years old. I have seen Christ born and I have seen Kennedy die. I have been a king in the past, and a dictator in the future, but now it is 1842 and I am a prisoner sentenced to hard labor on the Moscow to St. Petersburg Railroad.

My head still under the blanket, I call out the two questions that have become the tools for defining my reality.

"Mikolaj, are you still here, my friend?"

"Yes, Count. I have not escaped in the night."

"I am sorry to hear it, but since you are still here, tell me who is Tsar of all the Russias today?"

"Nicholas, Count. It was Nicholas yesterday and it is still Nicholas today."

"And it will be Nicholas tomorrow," says Jan, "unless we are very lucky."

The rest of the prisoners are moving out of the hut, but the three of us linger. This time alone will cost us our share of breakfast, but we usually find the warmth and repose more satisfactory than the three gulps of cabbage soup that is our allotted morning meal. After a night spent with 30 unwashed men, huddled against one another for warmth like pigs, it is

BY ERIC T. BAKER
ILLUSTRATION BY DOUG ANDERSEN

wonderful to spend a few moments in peace.

All our cabin is Polish, but only Mikolaj and Jan are from the unfortunate uprising of 1830. The rest are criminals or revolutionaries exiled since that time. Like their country, they are surrounded by a hostile land and people, so they cling together. Mikolaj is their leader, and he keeps them alive, but he had given up hope for anything better than mere survival. Until I came.

"It must be today," says Mikolaj in a low voice. "Olav suspects. I see it in his eyes."

"Yes, Count," agrees Jan, his voice barely above a mumble, "today. Tonight I must either be free or dead. I can bear no more waiting."

I groan and stretch my poor arms. They have grown so thin that I hardly know them any more. "Another week would see the onions in season, my friends," I say.

"Food does us no good if we are not free to eat it," says Mikolaj. "I tell you that Olav suspects."

"Perhaps," I say, and I consider the weak light coming through the tarp roof of our rough cabin. "Let us watch the sky. If we can smell rain, then we will go."

"Good," grunts Mikolaj, then rises and says in his normal, gruff voice, "Come, Jan, will you sleep the whole day away?" My friends rise and leave, tucking their blankets about them. Mikolaj and Jan are probably the only prisoners who can remember the last time we were issued new clothes. We have never been given coats. The blankets must serve to warm us day and night.

It is time to get up, but I linger. I have been a prisoner nearly two months now, and I still cannot explain my presence in this place. I remember going into the back of the burning truck. I remember firing twice at one of Snake's robots, my shotgun's flechettes shredding its polymer hide. I remember reaching the bomb detonator, switching it off, and then smashing it. I remember pain and the floor of the truck coming up to slam into my face. I remember more pain and the flicker of the blue lightning as a matrix cut me out of 1936. The next thing I remember is waking up here with my matrix gone.

The other prisoners know even less than I do. Mikolaj tells me that they returned from a day's labor to find me laying unconscious in the middle of the floor. I have spoken with those of the guards that I can, but none of them will admit to knowing anything. I have argued that since no one knows *why* I am here, perhaps I should *not* be. They laugh. I am here, that is enough for them.

There is a hacking cough from outside the cabin and I roll quickly to my feet. I am just tucking up my blanket when Olav bursts into the dim cabin. He is a short man, even among the malnourished Slavs, and I have more than a foot of height on him. Olav resents my height. He has frequently threatened to cut me off at the knees so that he can look me in the eye. Formerly when he found me still on the floor in the morning, he kicked me till I rose. Now my fellow prisoners warn me with a cough when he is coming.

Olav is a sergeant in the special rail police, that not-so-select group that is in charge of keeping order among the thousands of impressed serfs and prisoners who are doing the work of building the railroad. Revolts are frequent because of the conditions, and the police quell them with shootings and floggings. It is grim, distasteful work, and most of the police ease their troubled consciences with drink. Olav has no need to ease his conscience; he enjoys the work. Keeping us in our place, he calls it. I call it sadistic brutality.

"You are late, Ponivitch," says the ugly pug of a man, tapping his club against his thigh.

"As you say, honored Sergeant."

"You must show more energy, Ponivitch. Some of these other pigs look to you for their example. Your sloth might bring them great pain."

"As you say, honored Sergeant."

"Good. Tomorrow I am sure that you will be the first from this cabin, ah, Ponivitch?" I am anticipating the blow. The trick is always to take enough of it to satisfy him, but to dodge enough of it so that you are not crippled. I miscalculate on the side of the former, but that

is better than the other way. The pain sends me to my knees, but I am spared a second blow of the club. He urges me to my feet with a kick, and then propels me out the door with a shove. He leaves me in the dirt by the breakfast line and goes in search of other prey.

The big shepherd, Kasper, helps me up, and Jan is quickly at my side.

"Are you all right?" Jan asks.

"Fine," I lie. My every breath makes my ribs ache.

"I should kill him maybe?" asks Kasper hopefully. Kasper is here because he snapped the neck of a Russian soldier who tried to rape his sister. He would have been hanged if not for the railroad's demands for manpower.

"No, Kasper," Jan says, "not yet."

"But soon, Jan," I say, rubbing my bruised ribs, "soon."

After breakfast, we begin our march to the forest, three miles distant, where we are felling trees for railroad ties. To my mind, it would make more sense to move us to a temporary camp near the forest until the job is completed. This would not only spare us the two hours of marching a day, but also add two hours of tree-felling a day. Our masters do not see it that way, and I learned quickly not to offer them my suggestions.

As always on this march, my thoughts are of time and rescue. Mikolaj and Jan think of escape and they are right. We must escape this camp, but even then I will still be trapped in this time. We can run away from the guards, but without one of the Designers' matrixes, I can only travel time the slow way, forward, minute by minute.

Matrixes are metallic, 20-sided Aristotelian solids, never more than an inch across, with a density greater than gold. Time machines controlled by mere thought, they were created by a race, the Designers, who will be born in a far future universe laid to waste by entropy. They will use the matrixes to carry them into the energy-rich past where they were wiped out by one of their own genetic creations.

The existence of the matrixes divides the people into two classes: time travelers and ephemerals. Each class is bound by a linear march of moments, but time travelers can jump over the ephemeral ones. If a time traveler chooses to live an ephemeral moment, that same moment passes for all other time travelers.

The practical effect of this is illustrated by Azazelo's eternal hunt for Snake. Azazelo will follow the trail of Snake's matrix to London in 1940, where he will find that Snake has jumped for Beirut in 1964. Azazelo must wait the few hours it will take his matrix to recharge, and then jump to Beirut, where he will find that Snake has used those hours to recharge *his* matrix and jump for Capetown, 2002. Azazelo can't jump into Beirut while Snake is still there because, for the matrixes, that time has already passed. They will create a new timeline rather than let a time traveler into a time that they have already "lived." The only way Azazelo ever meets Snake is when Snake waits for him to arrive, which Snake does only when he wants to spring a trap or deliver a taunt.

Ironically, it was Snake who gave me my first matrix. Snake is always seeking new matrixes and buying himself time by passing his old ones to resourceful young people who don't understand what they are getting into. Believing that I was pursued by a mad man, I spent two years jumping from time to time, until finally Azazelo caught me, spared me, and resumed his hunt for Snake.

What Snake buys himself time for is atrocities. He has pet times and pet places, and he is brutal in defending them. While in 1936 for the Olympics, I encountered Snake in the midst of a plot to kill Stalin. I might have allowed it, but he planned to carry out the assassination with an atomic bomb. I could not let hundreds of thousands of people die, even on the chance that it might save millions.

So Snake and I fought, in this place but 96 years in the future. I lost my matrix and now I am an ephemeral. I need a time traveler to rescue me, and a week of consistent answers to my morning questions has decided me that one is close by.

The matrixes' ability to create new timelines has made ephemeral time a changeable place without changing the way that everyone

experiences it. As a time traveler, you don't notice it because you are creating the changes. As an ephemeral, you don't notice the changes either, because a change of the past changes your memory of the past too, unless perhaps you have been a time traveler for 40 years and part of your mind is still outside time.

I formed my morning questions because for the first week I was on the railroad, things were hard physically, but understandable mentally. Then one morning I woke up and Mikolaj wasn't in the cabin. I asked the obvious questions and found that I was the only person who remembered him. Even Jan had never heard of him.

That morning was bad enough, but it was worse the next day when Mikolaj was back and no one remembered him being gone. Nor did anyone understand my surprise later the same day when I found that the Tsar was named Constantine. I remembered that Constantine had stepped aside in favor of Nicholas when Alexander died, but no one else did.

And so things went and so I formed my questions. For six weeks I received different answers nearly every time I asked. Mikolaj came and went. So did Nicholas. Then other things began to change too. The changes were coming faster, becoming more marked, when suddenly they stopped. For the past week, nothing has changed, and in the mornings the answers are always the same.

I have two theories about why everything seems normal again. The first is that my memory has simply become as ephemeral as everyone else's. It is certainly possible that the world is still changing just as it was, but I am no longer noticing. This is a very depressing theory when compared to the second.

My second theory is that a time traveler has arrived close by and that we are again riding the leading edge of change. If so, I have to contact that traveler and convince him to save me. The problem is, How?

As an ephemeral, you don't notice the changes either, because a change of the past changes your memory of the past too.

Our work gang in the forest consists of the camp's 30 Poles. There are three police guards to watch over us, and none of them except Olav is very alert. We are not in chains, and there is nothing particularly distinctive about our clothes except their age. Yet, for all the seeming laxity of our confinement, we are in a prison nearly as impregnable as Devil's Island. It is called Russia.

The St. Petersburg — Moscow railway was the first ever built in Russia. The legend is that there was an argument over the route the road should take and that Tsar Nicholas settled it by using his sword to draw a straight line from Moscow to St. Petersburg. Whether the story is true or not, the railroad does indeed run in an almost straight line, over ravines it might have run along, through mountains it might have gone around, and nowhere near the towns it might have served.

From where we are working, the nearest major town is Torzhok, 30 miles west. If we run east, we would have to go nearly 35 miles to reach Likhoslav. Between us and either of these towns stand numerous estates, places where the serfs live out their whole lives for generation after generation and a stranger cannot pass unnoticed. In short, while we could easily escape our guards, we have nowhere to go. Even if by some miracle we reached a town before we starved or froze or were caught, we would arrive without money and without friends. In such a state, even a town might not be shelter enough to hide us from the police.

The enormity of these obstacles had kept Mikolaj from considering escape. I thought it impossible as well until Jan one day remarked that our present camp was only nine miles from the ancestral home of a Russian nobleman, Nicholas Ignatioff, whom he had met when they were both in Paris before the Uprising. I had plumbed Jan's mind, getting him to tell the stories of that summer in Paris again and

again. It seemed possible that the friendship had been such that Nicholas might not only still remember Jan, but he might even shelter us from the authorities. It was a slim hope, but we had no other.

"You ready?" Kasper asks, startling me. "We take now?"

"Yes, Kasper, I am through," I say, and step back as Kasper and Bohdan put their forks into the log that Mark and I have been trimming and roll it toward the wagons. I suddenly realize that I have lost track of Olav, and I look about for him. It is important to be aware of Olav when you work. When he is out of sight, you can work at a leisurely pace, but when he is close, you work hard. Industry may not save you a beating, but sloth will certainly earn you one.

I clutch at the axe I have been using to trim the logs when I catch sight of Olav. He is at the far end of the line, yelling and waving his club at August. An outspoken divinity student with some unpopular ideas about personal rights and freedoms for his countrymen, August was sent to the railroad by a military tribunal. He has a breathing disorder (probably asthma) and there are times when he just cannot get enough air to work. Olav has diagnosed the illness as laziness and seeks to cure it with beatings. His program has shown no results yet, but Olav takes great pleasure in applying the treatments.

I look at the sky and find it cloudy. I sniff the air and find it humid. I feel the axe in my hand and find it heavy. I decide. August has had enough of Olav's treatments. I have had enough of this life.

Corporal Rodzinski sees me coming and pushes himself away from the tree he has been dozing against. "You there," he says, "go back to your place." Rodzinski is the heaviest of our guards, and the kindest in his way. I regret what I must do to him even as I am catching the eyes of the closest prisoners, causing them to edge toward the florid corporal.

"I go to speak with the sergeant, honored Corporal," I say, stopping four feet from him.

"Ha. Better you do not, Count," says Rodzinski. "It is painful to talk to the sergeant."

"I know, honored Corporal, that is what I must speak to him about."

Suddenly Rodzinski seems to catch the undercurrent in my voice and he looks about nervously. Four of us now stand within two yards of him, all of us staring at him. Too late, the unlucky corporal goes for his musket.

People expect you to swing axes. It takes them off guard when you jab with one. Rodzinski doubles over with a whoosh of pain after I ram the butt of my axe into his solar plexus. Instantly the other prisoners are on him, and I am hurrying on to Olav.

The beating is under way as I arrive, axe still in hand. Six more workers stand about, Kasper and Jan among them. They hold axes and saws themselves, but they do nothing except watch as the club rises and falls to the tune of Olav's gleeful taunts and August's breathless gasps. Such is the nature of the despair under which we have lived.

I don't take time for threats or warnings. Olav's back is to me and I do not ask him to turn around. I swing the axe up and bring the flat of the blade down in the center of the little sergeant's back. He yells in pain and falls to the ground beside August.

I stand first on Olav's neck as he tries to rise, and then on his wrist as he reaches for his club. "Stop!" he yells. "You'll die for this! Die!"

"Be quiet," I say and silence him by grinding my bare heel into his shoulder. "I am about to take your life, honored Sergeant. I give you a full minute to pray."

"No! Rodzinski! Bojko!" I look over my shoulder. Rodzinski is motionless on the ground where I confronted him. Bojko, at the far end of the line, cannot be seen for the crowd of men about him.

"They cannot help you, honored Sergeant. Please hurry and beg God to forgive you. Your time flees."

"Stop him, you fools!" roars Olav to the others. "Stop him! You'll all die! They'll hang you all for this. Stop him and save yourselves!" The other prisoners stand where they are.

I do not like to kill. I never do when I can avoid it, and even over a brute like Olav I hesitate. Not that I have any sympathy for him, but perhaps he has a mother somewhere who will cry for her lost son. Perhaps he has a brother who loves him, or a sister he is kind to. It sickens me that I may cause such people grief, but then I also know that they will be mourning a monster.

From the other end of the line comes Mikolaj's wasted voice, raised in a hoarse shout. "Freedom!" he calls with all the power in his skeletal body, and the cry is taken up by others. The word seizes my arms. My axe jerks up and swings down, embedding itself in the little policeman's shining head. The body under my bare, dirty feet jerks, quivers, and then lies still.

The rain falls in a steady sprinkle as the whole troop of us shamble through the gathering darkness. Most of us carry shovels and axes; some of us carry each other. Kasper carries August. Between his asthma attack and Olav's beating, the former divinity student cannot bear his own weight. Kasper supports the much smaller man on his broad back. Others are similarly supported, those too weak or too sick to last the long march. There had been talk of leaving the weak behind, but I would not have it. Three deaths were too many already. I would not leave anyone behind to face death and worse.

I am putting one foot in front of the other, concentrating on the feel of the cold mud between my toes and trying to ignore the ache in my ribs when Jan, who is walking before me, stops suddenly and points. To the left, just visible through the rain, lights flicker in the distance. "Do you hope . . . ?" Jan asks me.

"Yes, I hope so," I say, pulling my soaked shirt away from my body one more time.

Now that we are closer, it is obvious that the lights are coming from a fair-sized manor house. Somehow we have managed to come upon it from the back. Mikolaj stops beside me. "Is this it?" he asks.

"I think we have to try it," I say. We made our break just before noon. We ate our food, then took the policemen's jackets and guns. Ever since we have been trudging along roads, pretending to be a work detail from the railway, trying to reach the sanctuary of Ignatioff's estate before our absence is noted and investigated.

It is now nearly seven o'clock. I think we are standing at the threshold of the estate, but I can't be certain. My only directions are the sketch of a ridiculously crude surveyor's map I managed to make one nerve-wracking night three days ago. If I have gotten us to the right estate, it will be a triumph of dead reckoning.

"All right," says Mikolaj. "Jan and the Count go inquire. If you have any trouble, the rest of us will do what we can." Which won't be much, I think, but don't say. Instead, I kiss Mikolaj's cheeks. "Go with God," he says. Jan says his goodbyes, and we set off for the house.

My guess is that the doorman is approaching 60. He looks 70, but you always subtract 10 from the apparent ages of house serfs (20 from field serfs). He has us pegged as holy beggars from the moment he opens the door. The parallel between Russia's Christian beggars and India's Buddhist monks is interesting, given the difference between the religions. Both the beggars and the monks are those who have renounced their worldly possessions and all the associations of their previous life to wander the country in poverty. They travel from the site of one miracle to another. The holy beggars are looked upon as pests and fakers by enlightened Russians, but they are doted on by the serfs and by the more pious members of the nobility.

The doorman lets us into the wonderland of warmth and good smells that is the manor's kitchen, but he cautions us to keep out of the way. An elderly woman (the doorman's wife?) stands at the center of a whirl of younger women who are rushing about with pots and

utensils. The smell of baking bread and roasting meat is intoxicating.

"A big dinner tonight," explains the doorman, handing us towels and pushing us toward a pair of ancient chairs by the pantry. "There will be much food left over for us. The Saints send you to us on a good night."

"For which we are properly thankful," I say, "praise God."

"Praise God," the doorman agrees, glancing at the silent Jan.

Jan remembers himself. "Praise God," he agrees belatedly. Not the least of the frictions between Russia and Poland is religion. Free-thinking as Jan considers himself, he still has the born Catholic's dislike of praising the Russians' Greek Orthodox God. I, on the other hand, have no such problem. Like the ancient Romans, I have no trouble praising all gods because I believe in none.

One of the girls arrives with a basin and a pot of hot water. "Are you come from the Moscow Cathedral?" asks the doorman eagerly, while the girl pours the water and we hold our dirty hands under the stream. "Have you seen the Bleeding Cross?"

"That and much more," I say, "but wait now, for we have important news for your master's son."

"Young Boris?" asks the doorman in surprise.

"No," I say quickly, thinking, oh God, we are in the wrong place, "for Nicholas. Has he inherited this estate?"

"Oh, yes," says the doorman and I struggle to keep the relief out of my face. "Last June the old Prince passed away, God rest his soul."

"God rest his soul," I agree and this time Jan remembers to join in. "If that is so, then things are even more grave than we feared. Please, go to your master and tell him that Jan Galka is here with news of a most dire portent." The girl is now bathing our feet and she looks up at me with a worried expression. I give her a reassuring smile.

"And you are Galka, honored sir?" the doorman asks.

"My companion. Please, tell your master at once. There is not a moment to lose." The doorman is simple. He does not argue, he goes.

I have a good feeling about Prince Ignatioff even before we meet him. It has taken him only five minutes to talk to his doorman and decide to see us. We follow the old house serf through the servant's hall to a small parlor on the ground floor, and my respect for the Prince increases. Not only is he seeing us promptly, but he is not parading us before his family and guests. Perhaps he does still know Jan's name and has some idea what hearing it again in this manner means.

We wait standing. Much as I would love to stretch out on the love seat, I have not the heart to inflict my soiled body on its embroidered cushions. I am sorry enough for the marks I am leaving on the cream-colored carpet. I settle for standing very close to the fireplace, warming my back while looking around the room.

"Your friend has great taste," I tell Jan.

"I hope he is still my friend," Jan's mouth is set and his back is straighter than I have ever seen it. Even wearing his wet scarecrow clothes and covered with the mud of the road, Jan is managing an air of dignity. I hope it will help the Prince recognize him, because the years of captivity must have changed his features.

The doorman opens the door and steps aside. A tall Russian with black hair and a full beard (elegantly trimmed), wearing a blue silk dressing gown enters the room. His brown eyes pass quickly over me and fasten on Jan. They look him up and down, and then again. I see the tears forming in the kind eyes, and then the Prince surges forward and clasps Jan to him. "Oh, my friend," the Prince moans. "Oh, my friend, what have they done to you?"

"Nicholas," Jan says in a voice also choked with emotion, "Nicholas." I keep quiet and try to slow the excited beating of my heart. Close, we are so close.

The Prince steps back finally, and turns to wave the doorman away. He goes a little reluctantly. No doubt he wishes to hear of the portent. He does not realize that he has already seen it.

"Ah, Jan," the Prince says, still holding the other's arms, "when I heard that you had been arrested, I thought I would never see you again."

"And you would not have, my friend, if not for this man." Jan waves at me.

"Oh, yes. I forget myself," says the Prince, releasing Jan and coming to me.

"Prince Ignatioff, allow me to introduce Count Poniatowski," says Jan.

"An honor, Prince."

"Mine, Count." His brow furrows, "Poniatowski . . . you are perhaps a relative of Napoleon's Marshal?"

"My grandfather."

"Ah."

"Nicholas," Jan interrupts, "forgive me, but time presses. I must tell you that we have not escaped alone. As we stand here, 28 of my countrymen stand shivering in the rain outside."

I have a good feeling about Prince Ignatioff. It has taken him only five minutes to talk to his doorman and decide to see us.

"Twenty-eight?" the Prince's bushy eyebrows jump in surprise.

"Yes. I know, I ask too much, but to leave them behind would have been to sentence them to the greatest cruelties. I could not; they are of my homeland and my blood."

"Jan, I understand, but it is impossible. You I can hide, perhaps the Count, maybe a few others, but 28? It is impossible. There is nowhere that I can hide so many. I would share your fate, and my poor family would be left dishonored and penniless." Again tears were flowing from the big Russian's eyes. "Jan, I want deeply to help you, but it is impossible."

Jan looks as disappointed as I feel, but we did foresee the possibility of this response. Time for Plan B.

"Prince," I say, "you are overestimating our requirements. We have been traveling all day. A barn, a pot of stew, and a night's sleep would meet our needs. We will leave before dawn. If the police do find us, it will be far from here."

"Nicholas, please," adds Jan, "in the name of the humanity we both love."

The big Russian looks from one to the other of us, and then he nods. "Yes, Jan. I must do what I can. My hunting lodge is empty; I will have Gabriel lead your countrymen to it. I will have dinner sent. Are all of your fellows as poorly clad and half-drowned as yourselves?"

"At least."

"I will have dry clothes sent to them. Where are you going from here? Torzhok? You will need money there; I will see to it."

"Nicholas . . ."

The Russian holds up a hand. "No, it is no less than is demanded of me. Now, while Gabriel does what can be done for your countrymen, you both must stay here. I will make arrangements to hide you in the house. The police will not dare to make too thorough a search of my home."

I smile and bow. "I am sorry, Prince," I say, genuinely regretful that I can't at least spend the evening here. This house is so warm and its kitchen smelled so good. "I cannot stay. I must return to my countrymen. It is I who ignited this escape, and I must see it to the end." Turning to Jan, I say, "I will explain to Mikolaj and give him your regrets."

"No, Count," says Jan with a rueful smile, "I will come in the morning and leave with you."

"Jan?" the Prince grabs his friend's arm.

"I'm sorry, Nicholas, I will stay with you this night, but I must go with my companions in the morning. Their fate is mine to share."

"Jan," I say, "you do not have to —"

"Yes, Count, I do." Jan's deep-set eyes flash at me and I am silent. There is a time to argue and a time to wait. A wise man knows the difference. Perhaps in the morning it will be possible to persuade him to stay.

"There is no need to decide now," says the Prince. "I will get the arrangements under way, and then we will find you some decent clothes."

As the Prince goes to speak with the servant, Jan turns to me.

"Less than we had hoped," he says, "but more than we expected. I hope we have as much luck with your friend in Torzhok."

"Alexander Afanasioff is not really a friend," I say, "but I think I can get him to help us. It is a small thing really. We only need him to write one . . . Damn!"

"What is it?"

"We are free. I am too accustomed to thinking like a prisoner. We do not have to wait for Alexander to write the letter. We can write it now, sign Alexander's name, and have the Prince mail it to the newspapers. As long as we are in Torzhok to explain to Alexander by the time it is published, that will be enough."

"I lay afraid I do not understand, Count."

"You will in time, my friend."

Forty years of wielding a matrix has left me sensitive to them. The arrival of one on this time wakes me from an uneasy sleep. The men about me shift, but do not awaken. We are free, but we are running and we still have no fire when we sleep. Two nights after the escape, and we still sleep huddled together like pigs.

I lie still again for a moment, trying to judge the direction of the arrival. West, I decide, but miles away. Even so, I decide to relieve my bladder and have a look around. I get up and make my way to the door of the barn, straining my eyes in the dim moonlight to avoid stepping on anyone.

Our escape is going well. In our new peasants' clothes we travel as a hired work gang, headed to a noble's estate in the north. We travel in the day because (in one of those wonderful paradoxes for which Russia is so justly famous) a gang of 30 rough, unwashed Poles are less conspicuous in broad daylight than in the dark of the night. Only thieves travel at night in Russia; honest men on their way to honest work go by day.

We keep to back roads and fields (they are sometimes indistinguishable) in an effort to avoid the mounted police. So far only one rider has found us. We bribed him to forget us with some of the money that the Prince provided. We have also used the money to buy food when we could. Mikolaj speaks for us since he has the least accent.

I am three steps out the door of the barn when I hear "pock," "whiz," and "thunk." My reflexes hurl me to the ground. I am spitting dirt before my mind identifies the noises as a musket ball going past my ear and hitting the barn behind me.

My heart beats wildly as adrenaline floods my body. The pain in my bladder is suddenly worse as the animal part of my brain demands I drop all ballast before running like hell.

This is ridiculous. Why would a time traveler use a musket? And how did he find me so quickly?

I hear a curse in Russian from among the high wheat that surrounds the barn, and then three more musket balls pass over me and "thunk" against it.

Russian curses? Oh, God.

I try to sink into the ground itself and only when that doesn't work do I scrunch around and throw myself through the barn door, praying that the musketeers are all reloading now.

They aren't. Two more shots bracket my leap, and I can hear more Russian curses as I land among my companions. "Police!" I yell, shaking and kicking them awake. "Quickly, out the back. Scatter and find

shelter! Police! Quickly, out the back!" More musket balls strike the front of the barn, but the Poles are moving now. The back door is open and they are fleeing into the night.

We are lucky the barn is not surrounded. In the moonlight I can see police moving to get a line of fire at the barn's back. Apparently I discovered them before they had their trap completed. Good.

"Count, come now," says Jan pulling at my arm. He drags me to the back door where Mikolaj stands urging the others on and Kasper has just departed, supporting the still-weak August. The rest of us are strung out in a line between the barn's back door and the fence some 50 yards away that divides the field from the woods. Jan pushes me out the door just as the firing starts at the fence line. Half the running Poles go down; shouts of despair and cries of pain fill the morning air.

"No," whispers Mikolaj even as Jan cries, "Ambush!"

"Come back!" I yell, horrified at what I have done. I reacted to the attack without thinking, and now my friends are dying for it. "Come back!" I yell again. Mikolaj pulls me out of the way as those that still can come running. Kasper is in the doorway when the second volley is unleashed from the fence. He grunts and August cries out; they go down in a heap, revealing bloody bullet holes in their backs. My stomach rushes to my throat and I turn away, tears of rage and self-loathing welling in my eyes.

There is another clash of gunfire, and more holes appear in the front of the barn, spilling shafts of moonlight into the dark interior. Behind me someone is saying the rosary and someone else is loudly sobbing. Standing beside the front wall, I wipe the moisture from my right eye and look through one of the holes in the wall.

Five police and an officer now stand upright in the field before the barn, calmly reloading their guns, the moonlight glinting off their bayonets. I turn back to the others and count quickly. Twelve of us still standing, two more on the floor.

"God forgive me," Mikolaj is saying, "but I hate this country with all my soul."

"What are we going to do?" demands Jan, from a corner where he is bending over one of the wounded men.

"There are only five of them in the front," I say, stepping to the middle of the group, "If we all charge, most of us should win past."

"Yes, Count, but for how long?" Mikolaj asks. "They have found us now, and killed half. Even if we escape this barn, how long will we escape the police?"

"I don't know, but at least it is a chance and a fading one. We must go before the rest of the police come up."

A gang of poles are less conspicuous in broad daylight than in the dark of the night. Only thieves travel at night in Russia.

"I will try it, Count," says Jan, closing the eyes of the man he kneels beside and crossing himself before he stands up to face us. "We are dead men," he continues, "but we are also free, and free men may choose the manner in which they will die. I intend to end my career as I began it, killing Russians."

"Mikolaj?"

"I made my choice back at the railroad," says the old revolutionary. "You are right; no more chains."

"All right. Come, we must hurry." We quickly line up on either side of the open door. I peer around the door jamb. The police have loaded their muskets and hold them ready. The first man out this door is going to die. I try to ignore the renewed demands of my bladder. "Ready?"

"God have mercy on us," says Mikolaj. There is a general "Amen."

"On three," I say. "One, two — No, wait!" The first man out this door is going to die. Unless he is already dead. "Jan, whose body was that you were kneeling over?"

"Bodhan's, but what does that — ?"

"Help me bring it over here."

Bodhan had owned one of the grayer histories among us. He had always claimed to be a political prisoner, arrested for distributing an underground newspaper. Perhaps he had been, but he had always seemed to know more about Warsaw's underground economy than he had of political dissidents. The more cynical of us had speculated that it was not news smuggling that led to Bodhan's arrest. Whatever, Bodhan had been one of us, a sandy-haired fellow-traveler with a ready wit and a sailor's mouth until a policeman's bullet had struck his chest and pierced his lung while he was running back to the barn.

Now three more bullets strike Bodhan's dead body as Jan and I hold it in the open doorway of the barn. Wood shatters to the left and right as two of the policemen put their bullets through the barn walls. Jan and I release the body and charge out of the barn.

The police have positioned themselves both too far and too close to the barn. They are too far because in the dim moonlight they could not tell the difference between a live man and a dead body. They are too close because now we are on them before they can reload.

A policeman thrusts his bayonet at me. I step around the blade and whirl into the man. I have a glimpse of two eyes wide with surprise as my right hand grabs the barrel of the policeman's musket and my left elbow smashes his throat. He falls with a gurgle of pain.

To my left, Jan is wrestling with another policeman. Beyond him, Mark is dancing out of the reach of another police bayonet. More of us arrive and Wiktor hurls himself into Jan and his opponent. The three of them go down in a heap.

Matthew cries out and falls back from a youth with an officer's hat and a sword. Our eyes meet and there is a flicker of recognition; one man of honor sighting another. If this youth and I had met in the drawing room of a St. Petersburg palace we might have exchanged cards, selected weapons, named seconds, fought a duel. Instead we have met in a muddy wheat field in the Ukraine. Wiktor and Jakob fall on him from behind. While they hold him, I kick off his hat and ram the butt of the musket into his head.

"Get their guns!" I yell as I return to the fallen policeman and strip him of his powder and shot. "Carry the wounded, head for the trees, the trees!" I begin loading the gun. It is slow going; I haven't fired a flintlock in 10 years and I can't remember how much powder to use.

The Poles are running for the trees.

Around me in the crushed wheat lay six human forms. Already the smell of recent death is overpowering that of the growing wheat.

A figure in a tall officer's hat appears around the corner of the barn. I put the musket to my shoulder and sight down the dull barrel. Deep breath, let it out, pull the trigger, wait while the spark . . . The gun jumps and the figure jerks back behind the barn wall. I turn and run for the trees. Shots come from the barn, and then from the trees.

Although no shot comes near me during my sprint, it is a relief to get a solid tree-trunk between me and the police bullets. I keep my back firmly against it while I set to work reloading the musket and catching my breath.

"Count?" Mikolaj's voice.

"Here," I manage to call between gasps.

"I have sent those without muskets to the north. We must hold here as long as we can and then lead the police south. We will meet the others in Torzhok."

"I understand." We will meet the others if any of us lives through this. The uncertain safety of Torzhok is at least another day's hard travel away, and the sun will be up in less than three hours. The police need only surround us and wait for daylight, but if they do so the others will have a three-hour head start. There is hope for them at least.

"They come!" Jan calls. Ten, 15, 20, 23 figures appear around the barn and spread out into a ragged line. Moonlight glints on bayonets

and swords. One of the figures in a funny hat shouts something and the line begins to shuffle forward. One of the Poles fires and some of the figures flinch, but none falls.

I am judging the distance (trying to decide if I can load fast enough to get a second shot) and thinking that this would be a good moment to appear out of time and save myself. I wonder why I haven't? Maybe I never get the chance. Suddenly I remember why it was I woke up back in the barn and reach down to open my pants.

Russia has always been a country of wooden dwellings. Even by the 19th century, Russia still has so many forests that even the serfs' dwellings are built of wood. In Torzhok, the only stone building is the city hall, and it is here that my companions and I are imprisoned.

Our location is really something of a compliment. Common thieves and murderers are held in a stockade behind the government compound, a poorly-constructed and ill-smelling place that we were marched past on the way here. Being foreign thieves and murderers, the 10 of us rate a small garret in one of the hall's spires. We don't have room to all lay down at once, and the sanitary facilities are crude, but our three window-slits do provide a wonderful view of the city. We spend a lot of time looking out these windows, watching the streets below. It is more interesting than staring at each other.

It turned out that our attackers were Torzhok militiamen. If we had been captured by the rail police, we would have been either shot immediately or taken back to the railroad and then shot. The militia's morale was bad, but our marksmanship was worse and they had the numbers. Wiktor died and we were all wounded before we were over-run and put in chains.

Pursuit was mounted after the other Poles. By evening, 10 of us, all of the original 30 who still survived, were brought into Torzhok. Our trial begins tomorrow. Mikolaj plans to say some inspiring things about human dignity and self-determination. I will give an impassioned discourse on my supposed grandfather's experiences in the French Revolution, but we don't really expect to save our lives. We are dissidents, murderers, thieves, and Poles. The trial's only suspense will be to see which is regarded as the greatest crime.

Jan comes to lean against the wall beside me. "Still no word from your friend," he says unnecessarily. Nerves.

"No, and he is not my friend." I look away from the street long enough to smile at him. "It was a mad chance anyway; as if a dangerous felon would be allowed to see a 16-year-old boy."

"Sixteen? Why do you want to see a child? What help could he be?" The other Poles have stopped their activities to listen. How can I explain to these men that of all the people in this city, Alexander Afanasiyoff is the only one who might attract a time traveler?

Of course, even Alexander wouldn't attract *every* time traveler. I am counting on any a traveler to this place knowing something of Russian literature and dance, particularly those works based on Russian folk tales. The most complete collection of Russian folk tales, used by generations of Russian writers and composers, will be collected into eight volumes in 1885 by one Alexander Afanasiyoff.

My plan had been to reach Alexander and get him to write to the papers in St. Petersburg and Moscow a letter full of references to time and future history that I would dictate. The incongruity of the author and the subject were something that a time traveler would recognize and hopefully investigate.

The Poles are still looking at me expectantly. "Alexander would be of little help in and of himself," I say, "but his is a name that certain people will recognize. Those same people will read the letters that I wrote and signed his name to at Prince Ignatiyoff's, and they will know that he would not write such things without a reason. When they see the letters, they might come to find out what that reason was."

"And when they discovered we were the reason?"

"Then they would help us. I think."

Mikolaj is shaking his head. "But, since we wrote the letters, and since we can't reach Alexander . . ."

"Even if they come, Alexander will not know what they are talking

about and they will not discover us."

"Ah, Count," Jan laughs and strikes my shoulder, raising a little cloud of road dust, "you are too gloomy. If they come, how can they not discover us? We are the talk of the whole region. Look." He points out the closest window slit. "All day long people have been coming into the city. By the time of the hanging, thousands will be here. I do not think we need your one boy to publicize our presence."

"Let us hope not, Jan," I say, thinking that the hanging of 10 criminals will be of little interest to most time travelers, and what sort of rescue could we hope for from those who are?

It is the middle of the night when I am roused from my nightmares by a tingling at the base of my neck. I stay still, but my breath quickens. There is a matrix nearby and it is getting closer. From below there comes a clatter of many booted feet on the stone stairs and flickering lamplight appears under the door. The noise awakens the others, and we are standing at the back of the garret by the time the key has been turned in our door. I rub the back of my itching neck as the door swings out. A militiaman with a truncheon and a lamp comes in. He is followed by a nobleman. More militiamen wait on the stairs.

The noble is a brown-haired, clean-shaven, six-foot man in a ruffled and gilded suit. He has a roll of documents tucked under one arm and holds a revolver loosely in one hand. He looks from one to another of us, and when he sees me, he smiles with a predator's grin. I do not know the face, but I know the smile. I had been right that another time traveler was nearby. Hurrah for me.

"Very good, sergeant," the noble says. "They all appear to be here. I will speak with this one on the parapet," he is pointing his gun at me. "Keep the others here."

Mikolaj steps forward. "I demand to know the meaning of this. Who are you? What is your business here?"

The noble lifts an eyebrow. "Demand? Sergeant, strike this man." Jan seizes Mikolaj and pulls him out of the way as the militiaman swings his truncheon. He swings it again, but now Jan has Mikolaj behind him. The blow catches the side of Jan's head, and Mark and I catch him as he falls back. The noble laughs.

"That is enough, Sergeant." The noble points at me. "Come."

"It is all right," I say to Mikolaj who is getting ready to protest again. "I know this man. I will be fine."

"Count, is this . . .?" he does not finish the question.

I shake my head as I surrender Jan's full weight to Mark. "I am sorry, my friends. I was so desperate to escape this place, I forgot to consider that a letter intended to reach my friends might just as easily be read by my enemies."

The tannery fires have been banked for the night and the storm clouds are days past so that the quarter-moon shines down unobscured as the Snake and I step out onto the spire's roof. We are on a walkway that surrounds the pointed cap, and chest-high embrasures surround the walkway. There is a cold wind here that did not reach into our quarters below. We face each other over the moonlit clouds of our breath and the dull metal of Snake's revolver.

My nose threatens to drip, and I reach for my dirty handkerchief. Snake shifts his paper to under his gun arm and offers me his clean one. I try to take it gracefully. "I like your new face," I say in English. "My compliments to your surgeon."

"Be quiet, Count. You have caused me enough trouble already; I will not endure your pale witticisms as well."

"Trouble? Me? How —"

"I have spent a lot of effort making sure that Mikolaj survives long enough to return to Poland at the proper time. Imagine my annoyance when I return and find him escaped." I do imagine, and it makes me smile despite the cold. "I left you in the railroad camp to keep you out of trouble while I fixed the damage you had caused in 1936."

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It wasn't until Vossoff and Nimmitz
came face to face with Lash
Justice, Sentinel of the Spaceways,
that they finally learned exactly
why crime didn't pay.

JUST A COUPLE OF

FREELANCE STRIKEBREAKERS

ARGUING ECONOMICS IN THE LIVER OF JUSTICE

The honeymoon planet
known as Mowntairey
was having one of its
usual disgustingly nice
days until the giant robot
decided to throw its two

cents in. The butterflies were fluttering to
and fro like little sparks of light, the birds
were chirping incredibly detailed melodies
in voices that sounded exactly like a thou-
sand stringed instruments, and the free-
ranging deer were posing for the tourists

BY ADAM TROY CASTRO
Illustration by Joel Naprstek

with big moist eyes
appealing enough to cause
dangerous ruptures in the
local space-time contin-
uum. Everything was just
so pink and peachy and

lovely and nice, not to mention pink and
peachy and lovely and nice, and even MORE
pink and peachy and lovely and nice, that
when the giant robot descended to wreak
its special brand of havoc, most of the
inhabitants were downright ecstatic.

The giant robot swooped down from the delicately perfumed skies to crash-land on the bubbling shores of the Champagne Ocean, and proceeded to march from the talcum powder beaches to the fifty-acre waterbed that is the Johnny Mathis Memorial Municipal Park. The population did not scream bloody terror in Japanese, as normally might have been expected; but rather cheered the destruction on, applauding every heart-shaped gift shoppe that got crushed to rubble beneath the invader's brooding nagian feet.

It wasn't until the massive war machine turned left at Oh, My Snoogums, I Love You More Than Life Itself Boulevard that its true objective became known: the three-hundred-story-tall, featureless black slab that was the most luxurious and expensive hotel on all of Mowntairey. Known simply as the Sensible Plaza, it is renowned throughout the civilized galaxy as the only truly romantic place on the planet — not because of its facilities or its service, which are both extraordinary, but because it has no windows whatsoever, and everybody enjoying a honeymoon there can pitch woo in tasteful elegance without once having their memories polluted by the nauseating putridity that dominates the rest of the planet. Sentients who treat their life-mates to romantic getaways at the Plaza are telling them, in effect, I love you so VERY much that I'm going to take you all the way to Mowntairey and THEN considerably not make you sick by subjecting you to any direct contact with the planet. Which explained why there was a five-year waiting list for reservations, but not why the giant robot had chosen the Plaza as its target de jour.

Then the juggernaut focused upon a single spot halfway up that shiny black wall, carved out a decent-sized hole with disintegrator beams fired from its eyes, then dispassionately reached through said hole, took out the squirming, screaming, striped-pajama-pants-wearing form of Karl Nimmitz.

When his wife, the beautiful and filthy rich Dejah Shapiro, appeared at the gaping wound in the side of the building, the high-calibre plasma cannon she carried was a testament to her reputation as the kind of woman who always packs everything. But she was too late. The robot had already swallowed Nimmitz whole, and rocketed off into space, with what observers said was an unmistakable air of relief to be done with all its business on this fuschia nightmare of a planet.

The Mowntairey Government's idea of immediate action was turning up the volume of the syrupy Muzak that played incessantly on all its city streets. Dejah Shapiro's was ordering her private fleet of warships into hot pursuit.

Alas, both tactics were equally ineffective.

In minutes, the giant robot was gone, taking Karl Nimmitz with it...

FOR NIMMITZ, THE LINE BETWEEN CONSCIOUSNESS AND unconsciousness had always been a subtle one. Unconsciousness meant total helplessness, the cessation of all rational thought, and a complete lack of understanding of anything that was going on all around him.

Consciousness, of course, meant pretty much the same thing.

As a result, whenever he had to determine whether what was happening to him at any given moment was real life or just his subconscious working off the latest in a long series of pastrami sandwiches, he always took stock of the situation, examined it from every conceivable angle, then judged for himself whether it made any sense whatsoever. Whenever it did, then he was only dreaming. When everything appeared totally nonsensical, then it was real life, and he was merely in big trouble.

For instance, today, when he opened his eyes, he was chained to the wall of a pitch-black holding cell. This didn't make nearly enough sense to be a dream; ergo, it was really happening. Most people would have been terrified; but though Nimmitz had never been one of the brighter sentients in the known universe (being in fact the only one of the bottom five who had never served on a jury in old-Earth Los Angeles), he did possess more than his share of experience in dealing with such developments...and he immediately understood the only possible reason why a life that had been nigh-idyllic for so long would so abruptly deteriorate into something as ridicu-

lously unpleasant as this. He peered out into the darkness and ventured: "Ernst?"

"Oh, God," somebody moaned. "You. Now I know I'm in hell."

As expected, it was the thick slavic voice of Nimmitz's one-time partner in crime, the notorious interstellar rogue Ernst Vossoff: a thick slavic tenor that had somehow always managed to embody both absolute megalomania and absolute desperation in the same breath.

Nimmitz had endured the better part of two decades being the man's sidekick, toady, object of derision and ridicule, and person to blame when things went wrong. Since then, of course, he'd met and married Dejah, who had not only officially dissolved the partnership but spent much of their subsequent life together laboriously teaching him to draw dotted lines between the words Vossoff, Disaster, Bad Idea, and STAY AWAY!!!!

She, of course, had been married to Vossoff once, and therefore was more than qualified to write theses on the subject.

Nimmitz, being a notoriously slow learner, felt only nostalgia at the sound of his old partner's voice. "Gosh, Ernst. I never thought I'd run into you again. How's it going?"

"I'm chained to a wall, you inane booby. How in the name of the Coal Sack Nebula do you think it's going?"

"I mean in general," Nimmitz specified.

"In general? This development qualifies as a wild giddy upswing. How's it going with you, not that I care? Are you still unfortunate enough to be married to that castrating nouveauriche harpy?"

"Oh, yes," Nimmitz said warmly. "We have three kids now. One of each."

One pregnant moment of silence later, Vossoff said, "I won't explore that."

"I have holograms of them, somewhere, but the giant robot that burst through our hotel room wall didn't give me a chance to pack them. And it's so dark in here that you wouldn't be able to see them anyway."

"Of course," Vossoff said, "that simply means I can't see you either, which will no doubt be all the consolation I can expect as we both dangle here and rot."

"Yeah," said Nimmitz affectionately. "Gee, last I heard, you'd been transported to your ideal alternate universe. What happened?"

"If you must know — and I suppose you must, since explaining it is the fastest way to get you to shut up — there was nothing ideal about it. It was a cosmos roughly half the size of a phone booth, and after I suffered several subjective eternities confined there, the gravitational anomalies caused by the addition of my own mass caused it to contract and spit me across the myriad dimensions like a watermelon seed."

"Gosh," said the mightily impressed Nimmitz. "And you landed here?"

"No; first I bounced into a continuum where magic was real and ended up being declared wizard of an unbearably cloying medieval kingdom where everybody had to wear green glasses all day long to foster the illusion that there was nothing wrong with economy. Not that I didn't appreciate all the free wealth and power, not to mention being worshiped like a god, but the incessant nonstop singing! And those lyrics! Give me a break! — Then I escaped, and found myself here, catching up on old times with the one human being capable of losing an argument with an oyster. I don't understand."

And then, somebody started laughing.

It was a bold laugh; a distinctive laugh; an heroic laugh; a laugh that could have been forged in the white-hot heart of a mighty sun. It was the kind of laugh that made a joke of danger, and sent evildoers scurrying into the dark shadows from whence they came. In short, it was the kind of laugh that can make you want to smack somebody...and since the sound was known and loathed throughout civilized space, both Vossoff and Nimmitz knew at once whose laugh it was. Even so, it was Nimmitz who spoke the dreaded name out loud, even as the lights came on and revealed their captor in all his splendid glory: "Lash Justice! Sentinel of the Spaceways!"

THE TALL IMPOSING FIGURE THAT posed in the center of the room, with the medal-laden Space Ranger uniform and the majestic red cape incessantly flapping from the robotic mini-fans that always hovered around him to provide just the precise degree of wind power needed to always render him perfectly photogenic, was indeed the gallant and indomitable Lash Justice, Sentinel of the Spaceways, scourge of evil and other living things. Back in the halcyon days of yore, when Vossoff and Nimmitz were still an active if not particularly thriving partnership, wanted on ten thousand worlds for their various criminal acts against the health and well-being of society at large, Justice had been the most-feared lawman in the universe...and not just by the criminals he hunted, since Justice was the kind of guy capable of arresting the entire population of an advanced civilization just because the planet bearing it orbited its sun faster than his personal interpretation of the local speed limit.

"So that's what this is all about!" cried Vossoff. "A fascist control freak obsessed with the preservation of the status quo at the expense of individual criminal achievement. Well, glory in your victory while you can, Nebula...before your much-prized victory turns to ashes in your mouth!"

Nimmitz said, "Eeeyewww. Eeeyewww. What an image."

Justice's head, which was hard to consider a head — it being closer to a cinderblock with eyes — swivelled to one side on an overly muscular neck that in motion bunched and corded like a burlap sack stuffed with ferrets. He fixed his pitiless gaze on Vossoff: "Do you actually think I went to all this trouble, just to arrest you?"

"Who else? There's nobody else here worth arresting!"

Nimmitz said: "Hey!"

Justice's laugh sounded like a great granite cliff crumbling to pieces beneath a bombardment of hail. "Nobody wants you, fool. Nobody ever wanted you. As far as the various law-enforcement agencies of the universe are concerned, you and your ex-partner here were never anything more than a useful public-relations tool, whom we permitted to run free and constantly get in trouble because you fail at everything you try and therefore bolster the myth that crime does not pay."

Nimmitz said, "Uh, Mister Justice? I don't know if you've checked your file on me recently, but crime paid for me. I'm married to the richest, most beautiful woman in the galaxy, who has made me the sole beneficiary of her will."

"Her taste," Justice sniffed, "is not the kind of crime I'm talking about."

"Hey!" Nimmitz protested.

Justice wagged a finger so muscular that it flexed and bulged alarmingly about the knuckles. "For your information, Mister Nimmitz, I did not waste three-quarters of the annual budget of the Space Patrol retrieving your ex-partner from munchkin land, and kidnapping you from your conjugal suite, because of any misguided belief that either one of you is any kind of serious threat to anybody. No; I went after you because, hard as it may be to believe, you hold the key to neutralizing the current single greatest threat to life as we know it."

Nimmitz frowned. "Pachinco?"

Justice gave Nimmitz the kind of look he would have given a purple houseplant that had just magically appeared in a previously unoccupied corner of the room, and after three attempts, repeated, "What do you mean, Pachinco?"

"Why is Pachinco the single greatest threat to life as we know it?"

"I didn't say it was!"

"Sure you did. You said I held the key to neutralizing the single greatest threat to life as we know it."

"And—"

This time Justice managed to hide most of his deep aesthetic revulsion. "No...he had himself miniaturized, and injected into a human liver cell, so he could foment a strike with truly universal repercussions."

"The only key I have on me opens my Pachinco Parlor."

The silence that followed was oppressive enough to level cities. During that silence, Lash Justice and Ernst Vossoff met each other's gaze. Justice's eyes were aghast, Vossoff's resigned, as, between them, tidal waves of incredulity were countered by brick walls of weary confirmation. Justice needed several seconds to regain his composure before somehow returning to the subject at hand. "You want to know what this is about, Mr. Vossoff? Roughly fifty standard years ago, when the pair of you were still an active partnership, you did some strong-arm work for an ambitious labor organizer named Sparrow Hawkins. Do you remember?"

"Certainly," said Vossoff. "As I recall, he was instrumental in organizing the lower-body brains of the Contaati detachable symbionts in open revolt against their upper-body counterparts. It was a masterpiece of outside agitation; thanks to his efforts, every single pair of legs on the planet detached and went on strike at the same moment, leaving all the Contaati torsos and heads and arms

stranded wherever they happened to be at the time."

"Yes," Justice confirmed. "Unfortunately, negotiations broke down, and all the legs migrated off-world in search of better employment opportunities, never to return."

"So the Contaati had to learn to walk on their hands. They weren't the first. Is that the reason you went to all this trouble?"

"Not at all. Organizing that strike may have been pointless, petty, irresponsible, destructive, immoral, and cruel, but it wasn't grounds for arrest, since labor organizers are legally required to exhibit those qualities at all times. No; once you three parted ways, Hawkins began to foment an even more dangerous labor dispute, one that presents a clear and present threat to the future of all organic life. And since you two knew him better than anybody else whose civil rights I'm legally entitled to trample on and ignore, you're the lucky ones who get to go in and get him."

"That's crazy! We're not qualified! We haven't seen him in fifty years! We wouldn't know him if he strapped us into chairs and began performing dentistry!"

"That's all right," grimaced Justice. "I know where he is, and what he's been doing."

"Playing Pachinco!" guessed Nimmitz.

This time Justice managed to hide most of his deep aesthetic revulsion. "No...he had himself miniaturized, and injected into a human liver cell, so he could foment a strike with truly universal repercussions."

"You mean..."

"Yes," Justice said grimly. "He's masterminded...the Revolt of the Mitochondria."

THIS STATEMENT REQUIRED A FAIRLY LENGTHY BIOLOGY lesson so Nimmitz could keep up. The gist of it was this: Imagine for an instant that you're a primitive conglomeration of organic molecules floating around in the primordial soup. You've been drifting to and fro, without direction, ambition, philosophy, or conscious thought, indulging in those things that make life worth living: essentially the absorption of nutrients, the voiding of waste, and the manufacture of others like yourself.

In this, you have a lot in common with Civilized Man. You even hate your life like Man does.

Look at yourself. You spend all your days locked in what for you is ferocious, savage struggle for survival. You have to carry around all these messy and heavy organelles: you have to make copies of them every single time you go through the long, painful, and horribly demeaning process of replication: and worst of all, you have to bob to and fro in the same primordial soup used by all the other primitive organisms, which is particularly disgusting when, if you think about it, which you can't really, you don't actually know where any of them have been.

Honestly. It's time to wake up and smell the protein.

And so it is that, one day, you have the cellular equivalent of an idea. You think, hey, I don't need to do all this work all the time. I can get somebody else to do all this work for me. And so you whistle for one of the other complex organic molecules, who naturally comes running on over because it's even stupider than you are, and you say, essentially: "Hey! Got any couch space?"

Your none-too-sophisticated patsy says, "Huh?"

"I mean, look. It's not like I'm going to be any extra trouble or anything. Look at you. You're doing a fine job of staying alive, and you seem to be enjoying it, when frankly it's not my bag at all. How's about you wrap me up inside your cellular membrane and give me a ride for the rest of eternity?"

Your patsy blinks. "I dunno, man. I don't think I got room for all your stuff."

"What, this crap? Are you kidding?" You contemptuously toss away all your organelles, a grand spiritual gesture that immediately impresses your gullible patsy with your independence and zest for life. "Don't you see, man? I don't want to saddle myself with material things. I want a more streamlined existence. I want time to contemplate the meaning of life. I want to figure out who I am. I want to sack out in a nice comfortable place, put my feet up, and watch the shadows on the wall. I want the freedom to be ME. I'm sure you understand that, right?"

Your patsy considers that. "But I'll still be absorbing nutrients and facing predators and recombining DNA. Why can't I have the freedom to be me, too?"

"Because," you explain patiently, "we can't both be me. I'm already me. You're you."

Your patsy, the spiritual predecessor of all things Nimmitz, considers that for a while, bending his chemically primordial non-brain to the calculation of why this arrangement might possibly be a little one-sided. And at long last, he says, "Well, okay. But you'll have to do all the cooking."

"Long as you do all the shopping." You shake pseudopods and it's a deal.

And ever since then, every animal cell in the universe has carried several mitochondria, lazing about the cellular kitchen in its socks and dirty underwear, like the annoying house-guests that refuse to leave. Every animal cell in the universe has grown so used to having them there that it can't survive without the mitochondria stirring his soup and criticizing his tie. Every animal cell in the universe endures the little symbiotes inside it, with tremendous patience and almost no resentment; and every mitochondrion in the universe lives the microscopic life of Riley, thinking itself entitled royalty.

It's an arrangement which could have reasonably been expected to last forever.

Until Sparrow Hawkins decided to organize them into a union.

BY THIS TIME, NIMMITZ WAS SO THOROUGHLY OUT OF HIS league that he happily just relaxed and let Vossoff handle the rest of the briefing, knowing that it didn't matter how well he understood it anyway; whatever happened, he was still back in partnership with Ernst Vossoff, and that meant, whatever happened, that sooner or later the universe would contrive to drop a two-ton piano on his head.

He looked at Vossoff and saw that he was rapt in the way that only Ernst Vossoff can be rapt: his eyes acquiring the sickly evil glow of he who considers Profit mother, father, and favorite presidential candidate. Were his hands free, he would have been wringing them compulsively; instead, he merely licked his lips, and said: "How did you discover this, Justice? Nanospies? Hytex Projection?"

"Neither. It was pure coincidence. I found out by accident when infiltrating the lower intestine of a B'goth'tzum planet-squid. As you know, that beast is half the size of a solar system, and its cells are the size of some terran mountain ranges. I snuck in through the nearest bodily orifice, dressed in a foam-rubber mitochondria suit..."

"I would kill to see a picture of that!" snarled Vossoff.

"You scoff, but I'm the universe's greatest master of disguise, and have, at various times in the past, had to pass for things as varied as a solar eclipse, the rear end of a horse, and the intense feeling of *deja vu*. Trust me, becoming a primitive organism was downright easy."

"Probably your most persuasive interpretation," agreed Vossoff.

At which point Nimmitz saw the opportunity to break in, so he could make his official Legitimately Good Point for the current decade. "Excuse me. What I don't understand, Mr. Justice, is why you were infiltrating somebody's large intestine in a mitowhatever suit, when you didn't even find out what the mitowhoses were up to until you got there. I mean, was this just something that happened to be doing anyway? And if so, why?"

Justice's gargantuan head swivelled, fixing Nimmitz with the kind of look capable of distinguishing suns. "My personal life, and what I do on my own time, is none of your damn business."

That was too much for Nimmitz. He stammered: "B-but..."

"The point, pervert, is that once I got there, I found out that your pal Hawkins broadcast his dangerous subversive message to every mitochondrion in the universe. Of course, they didn't understand him, because they're mitochondria, and you can put ten quadrillion of them in a stadium and still not achieve enough IQ points to make a telepath itch. But then he linked them neurally, using advanced hytex technology, and broadcast his message again, and this time managed to gather them together in a single, malevolent, utterly conscienceless group-mind, as dangerous in its own way as the Old Earth Republican Party. And at precisely 234:451 tomorrow, Andromeda Mean Time, Hawkins will start directing them to shut down all cellular life in the universe — at the rate of one civilized world every ten minutes."

"Good Lord!" shouted Nimmitz. "That's almost two an hour!"

Justice shuddered, then swivelling his protruding chin like a yardarm, once again fixed his attention on Vossoff. "Hawkins has refused all attempts at reasonable negotiation. He intends to go through with it no matter what settlement

we offer him. Our only hope is to stop him...or hand total control of the universe to a bunch of little microscopic buggies!"

None of which frightened Nimmitz as much as the sudden mad gleam in Vossoff's eyes. "And where, pray tell, is this liver cell where Hawkins and his closest conspirators are hiding?"

Justice slumped. "Well...uh...I hate to admit this..."

"It's inside you, isn't it?"

**"You actually show signs
of growing a mind,
somewhere within the
grotesquely-shaped
knob you call a head
— You're right,
of course. I'm not
doing this to save
the universe."**

"Hawkins bribed one of the Space Patrol Medical Corps to inject him and his entire revolutionary cadre there, figuring that it was the last place I'd ever find him."

"Surprising," Vossoff murmured, "considering where he used to say your head was." He stirred. "And naturally, you didn't tell your superiors that this was where he was hiding, since their immediate response would be to atomize you as the most efficient way of stopping him. Out of fear for your own life you chose us, his last known associates, as the perfect patsies to miniaturize and send after him."

"I'm so glad we understand each other," beamed Lash Justice.

Nimnitz knew what happened next, of course. Vossoff would laugh derisively, Justice would issue some kind of ultimatum, Vossoff would spit out a string of hundred-credit words that sounded prettier than any flat no ever could, Justice would pull out his blaster and threaten to perform delicate molecular surgery on everything above Vossoff's third rib if he didn't get some cooperation like right now mister, and Vossoff would say something with many syllables that would boil down to, well, okay, if you insist. He was not prepared to hear the maniacal little chuckle that Vossoff almost emitted at moments of illusory victory...and the sound made his blood run cold..

"Why not?" Vossoff said, greedily. "Everybody has to save the universe sometime."

SEVERAL CENTURIES AGO, MICROSURGERY WAS ROUTINELY performed by intrepid teams of miniaturized surgeons who daily braved the arterial currents like the ancient white-water rafters who once with equal stupidity paddled into places with names like Widowmaker Falls. Then nanotech was invented, leaving miniaturization technology the sole domain of the tourist industry. People still get themselves shrunk down to microscopic size and injected into the bloodstream of other people, but only to see the sights and enjoy the local color; indeed, some people with particularly interesting insides have pancreases and duodenums studied with microscopic resort hotels. Some of them rake in a hefty percentage and earn a nice living without ever leaving the house. Others have no idea of the wild decadent parties going on nightly inside their kidneys: they just think it's something they drank.

The microskimmer *Nostromo*, which Vossoff piloted through the less-than-heroic insides of Lash Justice, Sentinel of the Spaceways, must have been requisitioned from one of those tourist outfits, since it came fully equipped with shag carpeting, a complete selection of tacky music from all over the galaxy, and a fully-stocked bar. Nimnitz availed himself of this last feature quite gratefully, since listening to an Ernst Vossoff explanation was an activity best appreciated after the death-by-alcohol-poisoning of several hundred thousand brain cells. Once he was several degrees removed from the strictly vertical, he staggered over the co-pilot's chair, surrendered to gravity, and slurred: "Awwrrri". Tell me."

"You'll have to be more specific than that," noted Vossoff. "After all, since your collected store of knowledge is practically nil, there's a correspondingly infinite number of things for me to tell you."

"I want to know what you're really after!"

"You mean, you honestly don't believe I'm doing this to save the universe?"

"No, I don't."

"Interesting," Vossoff mused. "You actually show signs of growing a mind, somewhere within the grotesquely-shaped knob you call a head. — You're right, of course. I'm not doing this to save the universe. Why would I want to save the universe? It's never done anything special for me. Indeed, it's frustrated me at every turn. I would not be surprised to discover that the mega-constellation formed by all the stars and all the galaxies is only a brilliant pointillist rendering of a dartboard bearing my aristocratic face. Not to put too obvious a point on it, my idiot friend: creation and I are not bosom buddies. It therefore follows that I would not even cross the street to save the universe unless I was handed some specific recompense for my time. And this caper presents an opportunity for profit that dwarves the collected assets of every financial institution that ever

offered ball-point pens at the end of little chains."

Nimnitz's lips moved for a good ten minutes after that, as he parsed Vossoff's various sentences into a form compatible with his lower-RAM software. Then he ventured a guess: "The Mitochondria. You want to make a separate deal with the Mitochondria."

"Are you mad as well as stupid? Do you honestly believe that I'd want trillions of primitive life forms as my partners in crime, when it previously only took one to completely ruin my life?"

"Then what—"

"I want what Hawkins wants. What Hawkins is really after."

They penetrated deep into Justice's Liver before they met their first active resistance: white blood cells engulfing their little vessel like groupies after a concert. Vossoff said that he would have adjudged this a wholly natural biological function were it not for the fact that white blood cells don't ordinarily wear helmets and jackboots. The kind of genius capable of re-programming the human immune system to resemble storm troopers — evidently to strike terror into the hearts of anybody foolhardy enough to infiltrate this particular liver — was enough to underline and italicize Nimnitz's sensation of impending doom. He moaned: "I don't like this, Ernst."

"There's nothing to worry about. This is a state-of-the-art microskimmer and they can't possibly find a way in."

"Which," said Nimnitz, "is exactly the sort of thing the scientist guy always says before the big slimy monster thing jumps out of nowhere and tears his head off."

"Can't you trust me for once? Can't you just give me credit for having an accurate grasp of the situation, having everything under control, and knowing precisely what's going on?"

"No," said Nimnitz, thus proving that Dejah's many lectures on the subject of Not Ever Trusting Vossoff hadn't been a total loss.

Vossoff would have responded with something incalculably withering, but he did not have the chance, since, as it happened, that was the moment the on-board htex signalled an incoming message. Vossoff pressed Transmit without waiting to hear who it was: "Hawkins! Sparrow Hawkins! I've got an interplanetary pizza delivery for Sparrow Hawkins!"

One uncomfortable pause later, a new figure appeared in the control room: the holographic projection of a man whose cold calculating eyes, cruel jaw, and sadistic smirk marked him as the kind of fellow whose facial attributes all had personality traits of their own. He was, of course, Sparrow Hawkins — and unless the ship's receiver needed some tint adjustments, his years of hiding inside Lash Justice's liver had somehow done wonders for his tan. "Ernst!" he chided. "You don't seriously expect to fool with me with that one, do you?"

"No," Vossoff said, nonchalantly inspecting his fingernails, "but by attempting such an incredibly lame ruse, I swiftly fast-forward past all the obnoxious, time-consuming preliminaries, wherein I attempt a brilliant strategical ploy that gets my partner and I past your security precautions, and into your secret lair where we're in perfect position to destroy all your plans, only to get caught at the last minute and hauled before you at gunpoint so you can express your disdain during the half-hour it takes you to summarize the full scope of your operation. I don't know about you, Hawkins, but since we both know that's the standard accepted scenario, I'd just as soon consider it moot and skip ahead to the part where we get together and I summarize the full scope of your operation."

Hawkins inspected his own fingernails. "Don't you mean where I summarize the full scope of my operation?"

"Not at all. Since I've already figured out what you're doing and what you plan to accomplish, it would be silly for you to waste time telling me what I already know. I would much prefer describing it to you and in that way demonstrate my vastly superior intelligence."

"I'm beginning to remember why you were never one of my favorite people. Why don't I just kill you both now and save us all a lot of time and exposition?"

"Because," Vossoff said, "if you indulge me in this, you may vaporize one of my partner's fingers for every detail I get wrong."

Nimnitz cried out: "HEY!"

Sparrow Hawkins laughed. "Same old Vossoff. Still using rocket

fuel to wax that stupid moustache of yours?"

"On occasion. The fumes stimulate my genius. And you?"

"Me," Hawkins said, "I believe in the old-fashioned stimulations, like the wily game of cat-and-mouse between perfectly matched foes. And so, counterproductive as it may be, I shall indeed take you up on your proposition — with but one revision, which in my humble opinion will probably render this a great deal more entertaining."

"Oh? And what is that?"

"I believe I'll let Nimmitz explain everything he's deducted...and vaporize one of YOUR fingers for every detail HE gets wrong."

"But he'll get everything wrong," Vossoff protested.

Hawkins signalled a confederate just out of frame. "Precisely."

As the hatch blew in, Vossoff yelled —

AMONG THOSE GIVEN TO COMPILING LISTS OF THE BIGGEST, the greatest, the most wonderful, the most spectacular, the most awful, and the most anything — i.e. those who otherwise would not be able to think of any productive way to spend their free time — the hour that followed ranks quite highly indeed among the annals of Most Excruciating To Watch. It didn't make the top ten, or even the top hundred (aforementioned slots being filled to capacity by parliamentary debates culled from several millennia of recorded high school civics classes), but it came close.

Vossoff spent most of it alternately screaming for mercy and berating Nimmitz for being such an unredeemable nincompoop. But then, that's how he'd always spent their hours together.

In any event, when the interrogation was over, Hawkins' amoeboid goons dumped Vossoff and Nimmitz into a prison cell carved from a deposit of fatty issue near the base of Lash Justice's spine. Nimmitz very quickly retreated to the farthest corner, giving Vossoff as much room as possible, guiltily averting his eyes from the smooth bandaged nubs at the ends of Vossoff's arms.

Silence reigned until Vossoff worked up the energy to begin his rant. "You know, I am getting heartily sick of the way you guess 'Pas-trami' very time somebody asks you a simple question."

Nimmitz shamefacedly studied his boots. "Sorry, Ernst."

"An apology," Vossoff repeated. "And had you simply guessed pas-trami once, thus losing me, let's say, no more than one pinky finger, I would have been content with that apology. But when you waste all ten of my fingers on gratuitously wrong guesses involving bologna, corned beef, brisket, and olive loaf, then I feel myself perfectly justified in taking personal offense to your flatline learning curve."

Nimmitz stole a guilty glance at the bandages wrapping the smooth, symmetrical football shapes that had until recently been Vossoff's hands. "Well...uh...actually, Ernst...that's not what I'm apologizing for. You see...by the time I made the last six or seven wrong guesses...I already knew the right answers anyway."

Vossoff's mouth moved for the better part of a minute before providing the desired "WHAT!?!?"

"That's right," Vossoff said sheepishly. "I was making wrong guesses on purpose."

"YOU LET HIM TURN MY HANDS TO CONCEPTUAL ART ON PURPOSE?"

By now Nimmitz was beet-scarlet, radiating overwhelming embarrassment in every direction. "Well...I figured it wasn't all that important. We can always stop at a genomat and grow you some new fingers later, just like you did for me, after that time you slammed my hands in the airlock door. I figured it made more sense to, you know, fool Sparrow into thinking he'd beaten us..."

"YOU SACRIFICED MY FINGERS AS STRATEGY?"

"Only the last six or seven! After that...well, I figured, since you were gonna have to make a trip to the genomat anyway...it wasn't like you really had anything to lose."

Vossoff rolled his eyes at the ceiling (briefly wondering, whether under the uncertain geometry of life under a microscope, it was in truth the ceiling, or even local Up) and said: "And I'm expected to believe that you've actually deduced his nefarious scheme? You, who

needed three nights with the owner's manual just to master chewing gum?"

"Well," said Nimmitz, "it wasn't that hard, after all. I just got to thinking, like you would, why would Sparrow spend fifty years persuading all the mitochondria in the universe to go on strike? How would that profit him? And I realized, well, gee, he's a crooked labor organizer, he's probably prepared a bunch of scabs ready to do the same work. Probably those itty-bitty machine-things, whatever you call them..."

Vossoff was almost too awestruck to reply. "Nanobots."

"Yeah, them. I figured, he's probably got a whole bunch of nanobot factories churning out trillions of artificial mitochondria under his patent. Once the real guys go on the strike, and everybody's wondering what to do, he'll poke his head out, say, hey, get to know me, and become the richest man in the whole universe. Leaving the real mitochondria unemployed without useful resumes. — They'll probably all get jobs at fast-food restaurants. You know, it would take a whole big bunch of them, standing on each other's shoulders, to even HOLD a spatula properly?" Nimmitz glanced at his one-time mentor to gauge his opinion, and was thoroughly taken aback by the sight of a wide-eyed, slack-jawed, thoroughly aghast, not to mention freshly fingerless slav, who for one of the few times in a life of unceasing villainy seemed genuinely overcome with emotion. "Gee, Ernst...you alright?"

"You figured it out," the trembling Vossoff whispered. "An IQ shaped like an egg and you figured it out!"

Nimmitz withered. "Yeah."

"You're not supposed to figure anything out, you addepleted anus!! You're supposed to be the stupid one! You're supposed to be the incompetent knothhead who asks all the dumb questions so I in my infinite brilliance can answer them! You're supposed to be my follower — not my mentor!"

Nimmitz blanched. "Do you want me to call off the escape?"

Had Vossoff possessed fists, he would have been waving them. "YOU HAVE ESCAPE PLANS TOO? DAMMIT, KARL, YOU'RE REALLY STARTING TO PISS ME OFF!"

"Oh, you don't have to give me credit for those," Nimmitz said modestly. "Dejah fixed me up. She always said that as long as you were running around loose contributing to the forces of entropy I could be plunged into danger at any moment. She said that she had to make sure I was always equipped to deal with it. So for our fifth anniversary she had me wired up with all sorts of neat Bettelhine Munitions bio-weaponry so I could kick serious ass in an emergency. — She said it was a lot more practical than the glow-in-the-dark tie I wanted. Wanna see?"

Silence reigned in the dank little fat cell. And finally Vossoff sighed, with the infinite sadness of a man who had just lost his last molecule of dignity, and took one last look at the rounded nubs at the ends of his wrists, and thought, well, maybe I won't have to fix these after all; what with this latest development I might as well leave 'em this way. And then he sighed again, and sighed a third time, so that any observer who didn't know him would have thought he was hyper-ventilating. And he said: "Oh, all right."

Nimmitz cracked his knuckles.

Specifically, and literally, the middle knuckle of his right hand.

As in breaking the seal, flipping open the little knobs of bone, and extracting a rapier-thin, telescopic blade with a perpetually glowing tip. He extended it until it was twice the length of his arm, then gave it a perpendicular fold midway along its length and set it to rotating at high speeds so it became a whirring blade of death. One second's application to the rear wall of the cholesterol dungeon and a circular escape tunnel was ready and waiting. Nimmitz retracted the blade all the way back into its recessed cavity, flipped the knuckle bone back into place, smoothed over the skin, then cracked all the other knuckles just to make noise. "Come on, Ernst!" he shouted. "We have a universe to save!"

Vossoff was still sitting in his corner, agape and aghast.

But after a moment he got up, shook his head, and followed his one-time lackey out the fresh tunnel in the dungeon wall...

HAD LASH JUSTICE, SENTINEL OF THE SPACEWAYS, not already known of the dangerous manhunt going on in his liver, the events of the next few seconds would have tipped him off.

The first indications came while he was on the hytex with Commodore Griffith of the High Command. Justice was in the middle of saying, well, no, sir, I really don't have all that much to report, we still don't know where Hawkins is, yes I know that the deadline is tomorrow, no sir I don't know who left the mess in the cafeteria — all the answers which have been traditionally given by maverick law enforcement officials, to the irascible superiors who have traditionally spent at least a part of every case yelling at them. Some of Justice's colleagues in the space patrol evaded this unpleasant part of their day by programming their ships with a holographic simulation of themselves, to keep saying "Yes Sir," and "I'm Working On It, Sir," every time their designated irascible superior called to give them grief; the only reason Justice never bothered is that he happened to know for a fact that all Irascible Superiors were themselves holographic simulations designed to rant and rave and holler about improper procedure no matter how heroically their underlings do their jobs. He'd made this discovery the day his Irascible Superior malfunctioned and started calling him Dammit Callahan, for no reason he'd ever been able to discern.

In any event, Justice was telling the Commodore Griffith hologram that he was in control of the situation when his right arm suddenly shot upward, swung wildly to the right, knocked over the coffee-pot, and circled in closer to his chest to perform a gesture considered obscene on a hundred separate worlds.

The Irascible Superior simulator, faced with an input it could not interpret, malfunctioned accordingly. "Dad-Blast it, McCloud! How do you expect me to explain that to the paper-pushers downtown?"

Justice's left leg responded by high-kicking, smashing the viewscreen in. He then fell to the floor and, although lying on his side, began running around in circles defined by his head as mid-point and his spasming body as out-of-control radius. Even as he began a high-pitched refrain of "Woo-woo-woo-woo-woo-woo," his keen analytical mind kicked in: Vossoff and Nimmitz must have found the enemy inside him. What's more, since his nervous system seemed flooded with random pulses, they must be fighting a savage battle for survival somewhere in the vicinity of his spine.

It was only with a herculean effort of will that Justice managed to duckwalk all the way from the hytex to the shiny command module at the far end of his command center, there to slam his palm against a certain ominous-looking black button, which happened to be in size, shape, color, and general placement absolutely identical to every other button on the console, distinguished only by its ominousness, a wholly inexplicable attribute that had marked it even in the spare parts bin from which it had come. Justice, who'd designed and built the console himself while enroute to Mowntairey, had chosen it, out of literally hundreds of identical buttons in that spare parts bin, as the one button ominous enough to deserve the honor of being linked to the next phase of his master plan. For he did have a master plan — one that would have horrified not only his Iras-

cible Superior, but his miniaturized lackeys as well.

He collapsed motionless, his mind projected elsewhere, his brain tabula non rasa.

And somewhere near his femoral artery, a gleaming miniaturized hunter-killer droid disguised as an errant fat cell emerged from its hiding place and homed in on the secret transmitter inside the Microskimmer Nostromo. It unsheathed its vinadium-steel claws, fired up its neutronic assault cannons, and launched itself toward its target.

It giggled maniacally as it went.

Nobody had ever said Justice was kind.

THE SUBMICROSCOPIC BATTLE RAGED THROUGHOUT THE length and breadth of Lash Justice's spleen, scattering thousands of defeated ameoboids in its path. Every time a fresh wave of attackers surged forward to overwhelm them, the bionically augmented Nimmitz merely zipped open another heretofore invisible flap of skin and pulled out another monstrously improbable super-weapon to instantly render them toast. Ernst Vossoff, who was reduced to merely tagging along, counted a Bettelphine Munitions Tachyonic Deacceleration Cannon, a Bettelphine Munitions Neutronic Disassembling Whip, and a Bettelphine Munitions We Don't Know What to Call It But It Sure Makes a Big Boom Thingie, before simply closing his eyes and reflecting that in all the years they'd been married, the beauteous Dejah had somehow never seen fit to equip him that way. Indeed, the most generous present she'd ever given him, on the day she finally kicked him out, was thirty seconds warning before she set loose the dogs...

...in any event, the battle raged until they burst through the wall of the heretofore impregnable fortress of the evil labor organizer Sparrow Hawkins, who sat on his throne wearing a psionic helmet while typing instructions into a portable hytex interface.

Vossoff, who was a traditionalist in some things, waited for the triumphant Nimmitz to announce his victory by saying something along the lines of, maybe, The Game's Up, Hawkins, or You're Through, Hawkins, or You're History, Hawkins, or even It's Over, Hawkins.

Nimmitz blew the mood entirely by saying, "Hi, how's it goin'? Mind if I turn off that machine there? The one that links all the mitochondria together?"

The thoroughly unimpressed Hawkins glanced at the hytex as if surprised to see it there. "You mean, this one?"

Nimmitz looked at Vossoff for confirmation. "Do I mean that one?"

Vossoff sighed. "Whatever."

"Yes," Nimmitz told Sparrow Hawkins. "I mean that one."

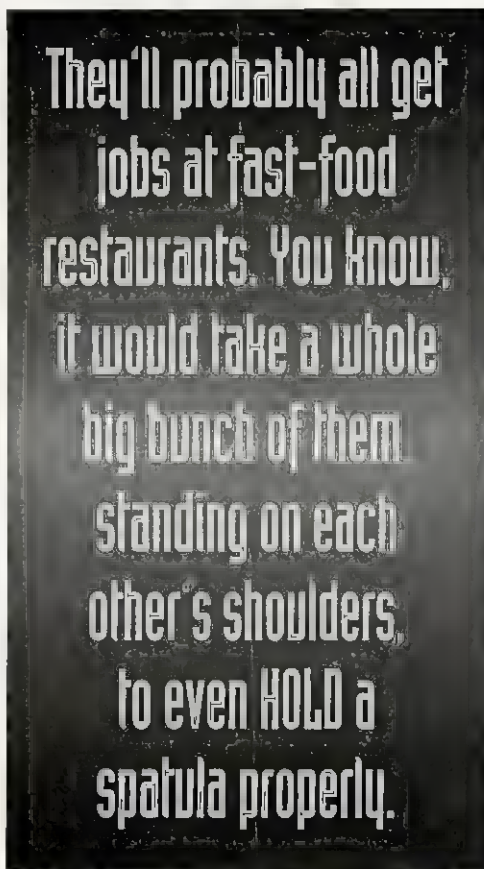
"Sure." Hawkins took off the helmet and placed it next to the hytex. "Go ahead."

Nimmitz strode over the brightly-lit device and flipped the large switch that said OFF. Nothing in particular happened, which was kind of disappointing after such a tremendous battle, but then it would have been awfully convenient to expect locally pyrotechnic results from switching off a machine linking intelligences throughout the known universe. After a moment, Nimmitz straightened up, shook his great bald head, and said: "So that's it? We're done? We won? It's over?"

"Not quite," said Hawkins. He turned to Vossoff. "You're such a smartass, Ernst, you explain it to him."

Vossoff raised the ends of his stumps toward his face, in a futile effort to twiddle the tips of his walrus moustache. He caught himself, frowned in irritation, then resumed his previously scheduled rant: "You see, Karl, the hytex here merely set events in motion. Hawkins needed it to link all the mitochondria in the universe into one vast

Continued on page 88



The driven Nicholas Jainschigg
is learning how to drive.

ARTIST ON BOARD

BY KAREN HABER

A born and bred New Yorker who recently moved to Rhode Island, artist Nicholas Jainschigg is especially proud of his newest achievement: learning to drive at age 36. Given the tendency of those in his profession toward distractibility, perhaps he should give other drivers a fighting chance by putting a triangular yellow sign in his car's back window warning: "Artist on Board."

Nick is also learning to drive a Mac with a whole slew of art-related programs. In addition to software, his new digs in the country hold a reference library containing 30,000 volumes, mostly art and photography books, 30 years of *National Geo-*

graphic magazine, clipping files, and his ongoing subscriptions to nature and science magazines. And don't forget the stuffed animals. Not beany babies or teddy bears: a spotted owl, mountain goat, and white tailed deer comprise Nick's collection, along with a few animal skulls and insects. (He likes to use the beetles for reference on iridescence.)

Nick actually prefers live animals and does most of his hunting at garage sales. Among the extant critters inhabiting the Jainschigg menagerie over the years have been long-lived turtles (25 years plus) and a litter of garter snakes. He and his wife Monica are presently the proud owners of







Squanto, a parrotlet with firm ideas about ownership and comfort, and a disconcerting ability to reproduce the meditative sounds of Nick's gastrointestinal tract. (Squanto likes to sleep on Nick's stomach.)

Lest you think that he spends his time only painting covers and illustrations for the leading science fiction and fantasy publishers and publications, you may be interested to learn that Nick has painted liturgical art for his mother's church, album covers, t-shirts, trading cards, *Star Trek* pop-up books of the original crew, weight-lifting belts, and is currently painting a diorama for a museum and cultural center for the Pequot Indians. He's designing a caduceus tattoo for an emergency-room doctor friend. And he also teaches a class in science fiction and fantasy illustration at his alma mater, the Rhode Island School of Design.

Whom does an artist whose album covers for bands such as Blue Murder, Jane's Addiction, and Manowar feature, in his own words, "blood, demons, knives, glowing eyes, and pompous symbolism" admire and attempt to

emulate? Would you believe the late Norman Rockwell? Nick admits to being influenced by the famous *Saturday Evening Post* illustrator, whom he considers a technical master. His absolute favorite illustrators of yore are N.C. Wyeth and Howard Pyle. (He was also an admirer of Roger Dean's fantastic album covers in the '70s.)

His heroes aren't very surprising when one considers Nick's science fiction illustrations: they're accessible, warm, and filled with realistic details and human faces. In a cover he painted for the resuscitated *Amazing Stories* of the '80s, he truly seems to be channeling Rockwell: a red-haired pre-adolescent boy looks up from his fishing pole in surprise. Behind him, reflected in the calm surface of the lake, is a spaceship about to land. What I especially like about this image is the way the artist has depicted the reflection, convincingly blurred and yet distinct enough to show the alien nature of the craft.

His use of color is striking and sophisticated, whether he's depicting a rabbi converting a scaly alien to Judaism, or capturing

the image of his wife being cradled in a robot's arms.

"Mood is the primary aim," Nick says. "It's what I try for almost without thinking. I try to have the illustration faithful to the mood of the story."

In order to achieve it, he reads every manuscript twice, high-lighting as he goes. "Luckily," he says, "I'm a quick reader."

"Sometimes I'll do a little thumbnail sketch right in the manuscript if it hits me right. The cover for *Trouble And Her Friends* by Melissa Scott was very much that way. Sometimes it's like rolling off a log. Other times, it's just impossible.

"I'll do two or three thumbnails. Before I know exactly what the image is going to be, I start a color sketch on illustration board, refining the idea in acrylic wash. That's a nice, flat, fast-drying medium that covers mistakes quickly. It's still a thumbnail but it has the chance to become a finished sketch."

He admits to being a perfectionist and welcomes deadlines because they make him stop painting. "I'm such a perfectionist, I'm afraid,

PREVIOUS SPREAD: Jainschigg manages to capture the science fictional that lies right beneath the surface of reality. LEFT: The artist is equally at home illuminating the alien. BELOW: Jainschigg has appeared often on the cover of Analog.





it's difficult to release a piece. What's really horrible is when I don't have a deadline and I just keep working and working, trying to get it just right. There's always something that could be done differently or better.

"What I try to do is draw real people — imperfect people. I prefer to work with non-professional models. I work from photos, or I'll pose myself. Sometimes from imagination." He laughs, adding that, often, he'll unconsciously assume the expression of his subject, which can make for a sore face at the end of the work day.

"I can occasionally use the computer — and the Poser program — to provide a rough to work from, but I have the same problem using the computer that I did with airbrush: I like to get my hands into the paint. I like to use a paintbrush."

In fact, it's surprising that an artist given to such low-tech media as egg-tempera and casein — "Egg-tempera is a wonderful medium, if you can keep it away from the bugs for the first couple of weeks until it hardens properly" — has bothered to acquaint himself with such computer programs as Poser, Painter, and Photoshop.

"I use the computer with tablet as a sketchpad, and Painter or Photoshop program to rough out ideas. Painter is better for thinking out loud, the latter, for composites. The only thing I regret is that, unless you digitally



archive your sketches, you don't leave a paper trail. There's nothing to sell at conventions."

Working on masonite with water-soluble oil paints, he begins by painting the figures, getting the position and expression down first.

If Nick is using the computer, he prints out his rough sketch and has it professionally sized up by a photocopy service. Then he coats the image with acrylic medium, and when that dries, shellac. "That makes it take the oils well." Next, he applies it to the masonite with flour paste. As soon as it dries, he begins painting over it.

"The computer enables me to solve technical problems," he says. "For example, to do multiple images, say, reflecting reflections, that I wouldn't do if I had to paint it by hand. But I really enjoy the process of discovery during the creation of each piece. I don't want

it to become a purely mechanical process."

He began his exploration of fantastic literature with Edgar Rice Burroughs' *At the Earth's Core* — "The one with the Krenkel cover." Then Nick raced through Burroughs' entire oeuvre and moved on to Lin Carter, Robert E. Howard, and L. Sprague de Camp. He preferred to read fantasy until he found Robert Heinlein's juvenile novels, which hooked him on science fiction. (Much later, Nick learned that he was, in fact, a second-generation science fiction and fantasy enthusiast: his mother had attended meetings of the famed Lunarians in New York, and actually had submitted stories to John W. Campbell.)

Nick displayed artistic talent at a young age. "I still have the first drawing I did where I realized that I had to put one leg behind the other to achieve perspective: it's a deer family. I did it in second grade."

By fourth grade, he had decided to combine art with commerce, and sold doodles to the girls in his class for a nickel a piece. His first official sale was in ninth grade, to his English teacher. That painting still hangs in his home town high school.

Both of Nick's parents were hobby painters and they encouraged his interest in art, arranging for him to attend art classes after school. By the time he was a senior in high school he was art director of the yearbook, and more importantly, knew he wanted to be an illus-

LEFT ABOVE: The artist's subtle palette wonderfully conveys the meeting between the personal and the cosmic. LEFT BELOW: The cover to the Arkham House edition of Ian R. MacLeod's *Voyages by Starlight* encapsulates the magical sense of wonder. BELOW: Computer imaging has helped the artist create many remarkably fluid compositions.



trator, with emphasis on science fiction.

Fresh out of high school, he approached *Analog* magazine, and his illustration of two squirrel-like creatures on a low-gravity world so impressed the art director that he kept it on file, where it subsequently became separated from its creator's name and phone number. After his graduation from Rhode Island School of Art, Nick brought his portfolio back to *Analog*. The new art director spied the low-gravity squirrels, recognized them, and hired Nick to do an illustration, his first for the magazine.

His first SF cover was an illustration for "6+," a story by Harry Turtledove for *Analog's*

September 1987 issue. He went on to work for many publications and publishers, including Avon Books, *Isaac Asimov's SF Magazine*, TOR, Pocket Books, and Marvel Comics. In 1991 he tied with Frank Kelly Freas for an *Analog* Readers' Poll Award for the best cover of the year, and two years later, received the Jack Gaughan Award for best Emerging Artist from the New England SF Association. But for Nick, it's not about awards, it's about a sense of wonder.

"Sure, awards are wonderful, who wouldn't like to have them? But what I'm going for is a feeling. You can call it a sense of wonder. I

call it the 'Damn, neat!' reaction." He adds, "I would dearly love to paint a picture that would make people's hair stand on end, either from horror or thrill or empathy.

How does he know when he's achieved the mood he's looking for?

"When I'm the one thinking: 'Damn, neat!' When I'm engaged, others get engaged too. How to do a good illustration is about figuring out what pushes your own buttons, which sounds oddly masturbatory. But it really is about whatever makes you say 'wow!' If I can produce something that makes others do that, then I've done my job." □





Though the alien Irazii called Jacob Silva a guest, he was sure that their space rescue was instead a kidnapping. But what could they possibly want with an Earther?

THE HITCH- HIKING EFFECT

THE SNATCH

The asteroid trawler, *49ER*, on route from its lunar home base at New San Francisco to a mining site in the asteroid belt, came to an unexpected halt, as if caught by a giant invisible hand, the unique event taking the entire crew completely by surprise.

Then, before anyone inside the ship could react in any way, a finger from the invisible hand outlined the bullet-shaped craft with a pencil-thin, faintly luminescent line that quickly increased in intensity to a brilliant neon-blue for a moment or two, just before ship and crew disappeared from the Solar System.

One moment there, next moment gone!

BY GENE O'NEILL

Illustration by John Berkey

INDIGO GLASS

It was indeed an odd cell, if one could accurately call it that, Jacob Silva thought, as he paced off the distance across the

circle for the umpteenth time in his week of confinement. Yes, still 20 feet, give or take an inch or two. Then, after slipping off his right boot and leaving it against the wall as a marker, he ran his hand along the wall surface as he carefully paced off the interior circumference again. One hundred 56 feet or so, back to the spot where he'd left his boot. Not a seam, crease, or crevice detectable in the wall either, and it was the same no matter where Jake felt. He'd worked carefully around the wall a dozen times, searching high and low for the hint of a door, a window, any possible exit; and moving his chair about, he'd stood on it and carefully examined every inch of the low-hanging, curved ceiling. Nothing but smooth, unbroken surface, everywhere he felt. He hadn't really expected to find any changes this time.

Jake was inside a half-domed room with no detectable method of ingress or egress, containing only himself, a bunk-like bed, and a small table and chair, the furniture made from a lightweight, but very strong, plastic like substance. The wall and ceiling were of a glass-like element, a deep indigo in color, giving off a faint blue luminescence that provided enough light to see clearly and, apparently, enough warmth to keep the temperature quite comfortable.

At different times, a pencil-thin line of luminescence would coalesce from dancing dots and intensify into blinding neon-blue, and food would suddenly appear on the table in serving dishes. A variety of exotic cereal-like substances, vegetables, fruits, nuts, and drinks, all quite tasty and apparently nutritious, for Jake felt healthy and strong. From time-to-time the blue line even provided entertainment and instruction of Earthly origin, what appeared to be videos from the library of the *49ER* played on a screen that suddenly appeared in the same manner in the air of the cell.

More importantly, at least for Jake's mental well-being, another member of the crew — K.D. Tamanaka, the first engineer of the *49ER* — had appeared in his cell just two days ago for a short visit in the same sudden inexplicable way. First just her outline in brilliant neon-blue, then K.D. herself appeared.

Apparently the Irazii could bring *anything* into the doorless half-dome in the same unusual manner, including a portable booth that contained a sonic shower and toilet. Magic, Jake thought, shaking his head — or perhaps more accurately some kind of alien teleportation or telekinesis.

So, he was indeed well-fed and comfortable, not suffering too much from the isolation, but still curious and very suspicious. He knew that the indigo glass was more than just a source of illumination and heat; it was like a two-way mirror, and he felt the Irazii watched him constantly.

But why?

For what reason had the crew been brought here?

What did the aliens want from him and the other crew members?

Were they all just curiosities to the Irazii, nothing more than zoo animals? He shivered at the thought, the long-term implications.

THE IRAZII

Jake had been intensely interrogated four times by the Irazii in the seven days of his capture, always in the same manner.

The luminescence of the cell wall would diminish in intensity, then the indigo glass would gradually lighten up, transforming to a much lighter shade of blue, until it finally revealed Jake's captors: the Irazii.

They were humanoid in size and shape — a little over six feet tall, very thin, with two legs, two arms, and a head — but insectoid in fea-

ture, movement, and mannerism. Jake had been most impressed by the complete lack of expression in their buglike faces, especially the multifaceted cold black eyes, whose penetrating stare reminded him of the look of a praying mantis examining its prey.

The Irazii always remained on a viewing platform — its plane outside the dome just slightly above the level of Jake's floor — hooked into some kind of console in front of them, bright silver wires running from the console to a jack in the back of their heads. When they questioned him, there were three or four of them, seemingly randomly spaced around the circle — the entire platform lined with consoles, easily able to accommodate 40 or 50 viewers if the Irazii stood shoulder-to-shoulder, but Jake had never seen even close to that many at one time.

The interrogations were always brief, a series of rapid-fire questions; but the fourth interview late yesterday had been quite different, because they had allowed him to ask a few questions of the interrogator ...

After the wall had dimmed and the Irazii came into view, the first words, as always, were preceded by a moment or two of static-like crackling — possibly the activation of some kind of translation device, Jake had thought.

There were three this time, their consoles close enough to each other so that Jake could see them all without turning about. When examined closely, the three Irazii were slightly different in size and shape, each having individual features, but their facial expressions remained similar, inscrutable throughout the entire interview.

"Good day, Capt. Jacob Silva," the Irazii in the middle said, the translation equipment making its voice ring with a tinny, distant echo, its cold black gaze at definite odds with the formal warm greeting.

"Good day," Jake replied, repressing an urge to shudder.

"Today, we will answer some of *your* questions," the interrogator announced. "You have many, we understand."

Jake had tried to ask questions in each of the previous three interviews, without any success; surprised by the opportunity this time, he first blurted out, "Why am I not allowed out of my cell to visit my other crew members? Am I a prisoner?"

The alien replied, "No, you are a guest, an honored guest. You are kept in the control dome for your own safety and comfort. Outside, here with us, would be extremely uncomfortable for you, perhaps even fatal. Too many gees of gravity, temperature too low, air too thin and oxygen-deficient, and because of some of your ahhh ... naturally aggressive responses, much too dangerous" The speaker paused for a moment to consider the other aspect of the question.

"The female crew member was teleported yesterday for your convenience and is not really allowed out of her comfort dome either. No need to teleport you to her. In fact, the procedure seems to be especially stressful to members of your gender —"

"What about the other crew members?" interrupted Jake, expressing his concern. There'd been six crew on the *49ER*; four males, two females.

The Irazii answered again in a matter-of-fact manner in a detached tinny echo, "Unfortunate. Very unfortunate. The three other males did not survive our rescue. Too stressful. They arrived alive but damaged and expired despite our best resuscitation efforts. So sorry. Both females fortunately survived, and you will be seeing the other one very soon now."

Thank God, I'll be seeing December, too, Jake thought, with a sigh of relief. She was the most important person in his life and had been for about a year; of course, he knew from his visit with K.D. yesterday

**They were human
over six feet tall,
but insectoid**

that December had survived. But Mel, Trey, Gavin, the three male crew members, all killed by the *rescue*. Even though K.D. had not mentioned visiting them, Jake hadn't anticipated them all dead. *Jesus...*

The Irazii called the snatch a rescue? he asked himself wryly, trying to cope with his conflicting feelings — joy that he'd be seeing December, sadness that he wouldn't be seeing his other three friends.

As if privy to Jake's silent question, the alien explained, "Rescue, yes. Your ship had a tiny defect in its drive, undetectable by your engineering instruments, but it would have soon ignited its fuel source, atomizing your entire crew. We were forced to act with haste. Without proper study, we were not aware our teleportation procedure would be so stressful on your gender. Be thankful that you and the two females survived."

Jake wasn't sure he bought this explanation of the Irazii's motivation for the snatch. They were just hanging around the asteroid belt or wherever they were actually located, waiting for someone from Earth to rescue? No, that explanation seemed bogus to him. The Irazii snatched the crew of the 49ER for some other reason that they didn't wish to reveal.

He asked a few questions concerning the survivors' future and being returned to their ship, which was apparently under repair; but the speaker was evasive about everything to do with the future, seeming to be interested in entertaining only a few basic questions of the past or present. Most of Jake's questions went unanswered.

The opportunity to ask questions was over too soon. And that meeting late yesterday, the last of four, had been Jake's last formal contact with the Irazii.

Occasionally the luminescence of Jake's cell would dim for a few moments and he'd catch a fleeting glimpse of the Irazii — two to as many as 10 on one occasion — hooked up to the consoles, just watching him, staring intently with their multifaceted black eyes; and apparently communicating with each other, in a series of high-pitched *clicking* and *clacking* sounds, which were indecipherable to Jake, since they hadn't been preceded by the crackling static. But these sudden dimmings seemed to be unscheduled, accidents that were all too fleeting ... perhaps a kind of power surge or maybe merely lack of concentration by the hooked-up viewers.

Jake thought a lot about the first three interrogations because they were actually quite surprising in subject matter; the questions always focused on his memories, about the abduction, his past relationships with crew members, especially his close relationship with December; and the more he thought about the questions and his responses, the more uncomfortable he became. A little paranoid in fact, because there was something not quite right about the Irazii focus. It was indeed strange that they had no apparent interest in Earth: its culture, its defenses, its science — the kinds of questions one would naturally anticipate from an alien. No, the Irazii interrogators asked nothing along those lines. Only questions about his past. And there was something definitely wrong with the nature of his answers.

Finally, he figured out what bothered him about his responses to the Irazii interrogators.

During the interviews but especially afterward, Jake was not able to recall any sensory/perceptual/affective information. How something sounded, smelled, tasted, and *especially* how something felt — never an emotional response, even to the bizarre abduction of the 49ER, and his eventual awakening in the indigo cell. Of course, this was more than just a little odd. It was almost like he'd read a script of his imme-

diate past and was repeating only what he'd read, completely void of affect or colorful sensory description — cold, flat, and uninspired.

The more he thought about this, the more he suspected that his memories had been tampered with and were possibly some kind of Irazii programming. They had written a script of the most recent part of his life — he drew a *blank* trying to recall anything from his childhood, or even any of his memories of time spent at New SF base on the Moon prior to about a year ago.

His earliest memories concerned December and her research project. She was a medical expert on affective behavior, especially the negative effect on the body of inappropriate emotional responses, like the flight/fight syndrome, the physiological tooling up of the body to either run or fight — increased adrenaline, increased blood pressure, increased respiration and soon. Inappropriate, even harmful behavior. December was conducting an experiment at New SF on a selected group of inhabitants, testing a belief that people profiled for habitat living, with all its stressful environmental conditions, might be more resistant to adverse emotional responses like the flight/fight syndrome. Jake had become involved both her experiment and romantically with December, herself. But he could remember absolutely nothing about life at New SF before December.

The Irazii's interrogations must be a test of the effectiveness of their own programming Jake determined — how well his recall conformed to their script.

But why?

Who was supposed to be fooled by the programming?

The two other surviving crew members — K.D. and December?

If that were so, Jake concluded, then all three survivors were subjects in some kind of Irazii-designed experiment.

EXPERIMENTAL SUBJECTS

K.D. had been teleported to visit Jake two days ago. Her neon-blue outline had been so brilliant, it made him blink, look away.

Then she was standing in the middle of his cell, appearing slightly disoriented and confused and, like Jake, still wearing her company tan uniform coveralls with the red 49ER logo on her shoulder, but her dark hair appeared different than from before the snatch, done up now in one long, neat, braid down her back.

Glad to see anyone from the crew, Jake quickly went over and hugged the diminutive first engineer, then led her to the table, where he sat her down in the chair.

"You feeling OK?" he asked, sitting on the corner of the table, after pouring her a cup of water.

K.D. smiled, sipped a drink, and nodded. "I'm fine, but their method of moving a person is quite unsettling, you know. Even though this wasn't my first trip, I'm still not used to it —"

"You've visited some of the others this way in similar cells?" Jake asked, anxiously.

"Who?"

"Yes. I've had two other visits with December, the last only yesterday, but haven't seen any of the others ... Our quarters all seem

**paranoid in size and shape — a little
with two legs, two arms, and a head —
in feature, movement and mannerism.**

exactly alike," K.D. replied, glancing about. "You haven't seen December yet?"

"No," Jake answered, "I haven't been out of here since I awoke from the abduction seven days ago. How is she?"

"She's fine, except she really misses you," K.D. said, smiling sympathetically. Then after a quick look at the indigo glass wall, she whispered, "Why do you think we're here? What do the Irazii want?"

"I'm not sure exactly what they want, but I think we're some kind of experimental subjects," Jake replied.

"Part of an experiment?" she said, frowning slightly. "What makes you think so?"

For a minute or two Jake talked about his three interrogations and his unease about the nature of his memories — the possibility they were planted or altered by their captors.

Then he asked K.D., "And the Irazii, they must have interrogated you and December, too?"

K.D. nodded, "Only one time for me, but twice for December."

"What was the nature of the questions? Did they ask about your memories too, or were the questions more technical, like about engineering?"

She frowned again, the crease between her eyes a little deeper, "No, not technical and not memories, really ... Actually their questions were kind of strange...."

That's funny, Jake thought to himself. You'd think they would be interested in K.D.'s expertise if they were repairing the 49ER's drive. This only strengthened his disbelief in the Irazii's explanation of the rescue operation.

Then Jake and the first engineer compared notes on the substance of the interrogations, K.D.'s one interview differing substantially from his in the nature of questioning. The Irazii had been interested only in her emotional responses to the abduction, her confinement, her visits with December, when she viewed videos of home. And for sure, nothing technical concerning her position as first engineer. They didn't seem to be concerned in the least with her professional function on the 49ER, only her emotional life.

Suddenly, at that point in their discussion, the luminescent line traced K.D.'s shape, intensified, and she disappeared, her visit lasting less than 15 minutes, leaving Jake frustrated with a number of still unanswered questions.

It was almost like the Irazii intentionally cut off K.D. and his comparison of their interrogations.

What had they expected?

Jake had no idea.

But his next visit with the third surviving crew member was to be longer and of quite a different nature.

DECEMBER MORAN

The 49ER medical officer, Dr. December Moran, appeared in Jake's cell about 24 hours after his last interview with the Irazii.

Irazii. Actually she was both M.O. and researcher on the 49ER, collecting blood and tissue samples from crew members during the trip out to the asteroid Belt and back to New SF for her project. How she

had arranged the dual temporary assignment with the company was beyond Jake.

For a moment or two he was frozen in place and just stared at December from where he sat on the corner of his bed, as she rubbed her eyes.

She, too, was dressed in the same uniform worn prior to the abduction. And like K.D., her auburn hair was worn now in a long, thick, queue down her back. Even with a dazed expression and wearing a wrinkled, baggy uniform, she was a strikingly beautiful woman, with green eyes, high cheekbones, and sensuous lips. She was tall, the curve of her breasts and hips just visible through the tan coveralls, contouring an athletic body.

And this gorgeous, sexy, talented woman loved *him*, Jake thought, grinning with pride, after regaining his composure.

Leaping up, he crossed the cell and swept the disoriented woman into his arms. "Oh, I've missed you," he said, hugging her tightly. "Until I talked K.D. two days ago, I wasn't even sure you were alive."

Her head obviously clear now, December smiled and kissed him softly on the lips. "Hmmm, I missed you, too. The Irazii told us — K.D. and me — that you were indeed alive. So, I wasn't worried about that... only if we were *ever* going to see each other again."

Jake nodded, realizing the Irazii had undoubtedly explained the fate of the other crew to December.

They hugged and kissed each again, slightly more passionately this time — "Wait, wait," December said, breathlessly breaking from his grasp. "I need to get my bearings. A moment ago, I was eating in my cell, then — *wham*, here I am visiting my lover. The abrupt dislocation is more than just a little disorienting, you know ... How do they do that, the food, the vids, the shower, apparently anything they want to move in to or out of a location? Is that how they abducted us? And how — ?"

Holding up his hand in the stop gesture, Jake said, "Hey, Hey, you're the scientific expert exploring questions and answers. I'm just a lowly trawler pilot."

December stuck out her tongue and punched his shoulder playfully.

For a few minutes they speculated on their fate, comparing notes on the Irazii interrogations, December lifting her eyebrows curiously when he mentioned his concerns about the odd focus on his memory. He told her his theory about the three of them actually being experimental subjects, perhaps testing his programmed memories.

December said, "I've been thinking somewhat along those lines, too. But whatever it involves, I think these visits are part of it. Even my short ones with K.D. But as soon as we began comparing interrogations the visits ended. They apparently don't want us learning too much from each other about what they're up to."

Jake nodded, reminded that his visit with the first engineer had been very short, too, ending after comparing Irazii questioning.

"What do you think they're doing?" he asked, reaching out and taking her hand in his as they talked, leading her to a seat on his bunk. "What's going on?"

"I have a general theory," December said, kind of huskily, her green eyes seeming to darken slightly in tone as her eyelids drooped, giving her expression a sexy look, "but we'll just have to talk about that later." She rose, unzipped her one-piece uniform, shucked the garment, and quickly slipped out of bra and panties; then she stood with her hands on her hips, an obviously seductive stance. "I have something else in mind right now — higher priority."

She moved closer and kissed him again, wetly, her nakedness mak-

had most **impressed**
their **buglike** faces, especially the
penetrating **stare** reminded him of the look

ing Jake soon forget about their surroundings.

He removed his coveralls and briefs.

Then, they stretched out on his narrow bunk and made love, and though they were each totally familiar with the other's body and moves, Jake felt somewhat clumsy and awkward, unable to completely relax and let go, attributing his inadequacy to the presence of the unseen observers; but December made up for his lack of commitment and enthusiasm, apparently her passion undampened by an awareness of the Irazii viewers beyond the indigo glass.

Afterward, still laying naked side-by-side on the narrow bunk, December, obviously aware now of being observed, whispered, "Seriously, Jake, you have no idea exactly what their plans are for us, even after four interviews?"

Shaking his head, he whispered back, "No, but we must have peaked their curiosity. This visit has lasted a long time. Maybe they are nothing more than common voyeurs —?"

"Well, they obviously know quite a bit about our sex habits now," December joked, laughing, then looking at him more thoughtfully.

After another few moments of silence, she disagreed with Jake's observation, "But I think it's more than just common voyeurism. They are not interested in viewing us per se. They are more interested in our emotional responses. I know that from the focus of my interviews, and K.D.'s, too."

She stood up, slipped on her clothes, and crossed the cell to the table. After pouring a drink of water, she turned to face Jake, her expression completely serious now. "I've considered this a great deal."

Then she stared at the indigo glass wall, her gaze distant, thoughtful.

After a minute or so, December began to talk in a tentative manner, obviously working out some conclusions as she went along. "The Irazii seem to lack affect — they are expressionless, completely unemotional when talking about things like our responses to the deaths of the other crew members. They must have some emotional response, but their affective reactions are very low key. A kind of flat line of feelings. Not like ours, with high peaks and low valleys. Maybe they used to be like us long ago, but have evolved. Who knows?" A trace of excitement raised her pitch slightly as she spoke more confidently now. "In any event, just suppose they appreciate ... even *savor* the rich intensity of our high and low emotional reactions. Perhaps they are technologically capable of actually *sharing* our emotional responses, experiencing the high or low psychological rush ... Like piggybacking on our joy, our anger, our fear, our passion, the whole gamut of our emotions ..." Pausing, she suddenly snapped her fingers. "No, not piggybacking, that's too crude, not an elegant or graceful expression. Let's call it ... hitchhiking —"

Suddenly, the blue line traced her shape, increasing in brilliant intensity, interrupting her analysis.

And just before she blinked out, she turned her back to him, and Jake caught a glimpse of something shiny ... like wire, braided into her queue.

Wha —?

But December was gone.

He was left dumfounded.

Long after She was jerked from his cell, Jake remained seated on his bunk, thinking, puzzling over what she proposed as an explanation for their snatch. Basically, she thinks we have something the Irazii want, he thought. They don't feel much on their own. They want

to hitchhike on our feelings for recreational purposes — use us as an emotional roller-coaster ...

December was right about the Irazii, Jake finally decided.

But the wire in her queue? What about that?

Then it occurred to him that K.D. had her hair done in the same manner, perhaps hiding wiring.

Yes, he was convinced now that both women had indeed been wired.

And he pictured the Irazii, wired to their consoles.

Jesus, he swore silently, holding his breath and combing his fingers carefully through his hair, expecting to feel foreign strands. But no, nothing but hair.

Jake was not wired like the women.

Tired, baffled by the mystery of it all, he closed his eyes and sighed deeply —

Then Jake blinked, a chilling thought reviving him: What if I were the only survivor of the snatch? What if the women were some kind of reconstructions, completely controlled by the Irazii, their only purpose to elicit an emotional response from me? Maybe that explained the wires connecting them to the Irazii.

Yeah, kind of like puppets.

"Oh, my God," he whispered aloud, remembering the lovemaking with December. It hadn't been right at all, not uninhibited, wet, and wild like normal. No, it had been kind of stiff ... *mechanical*. He thought it had been his fault, worrying too much about the Irazii watching.

But, no, it was December.

She was nothing but a puppet now!

Jake shook his head sadly, convinced that he was right, that he was the only experimental subject here. The Irazii were hitchhiking all right, but only on *his* emotional responses.

Probably right at this moment, too ...

THE HITCHHIKING EFFECT

Crackling static. The indigo glass simultaneously dimming. A brief glimpse of two Irazii communicating with each other:

"Congratulations, Azi, your reanimated pilot is an overwhelming success, both females emoting wonderfully, their responses to him delightful."

"Yes, the mating episode was exquisite —"

The glass wall opaqued back to indigo, cutting off the obvious translation error.

But, wide-eyed, Jake remained rooted in place in his cell, gazing at the indigo wall, as if staring into eternity.

He remained frozen for a long, long time, sorting it all out, until he saw fully what the Irazii had done, what they were doing, what they must intend. The complete horror of it all. And since being reborn seven days ago, he atavistically explored, without reliance on their flat programming, the depths of emotional despair ...

Then, the Irazii construct, who had once been a man, sneered defiantly at the indigo glass, reached slowly up to his face, and with the tips of his fingers he carefully clawed out both of his eyes. □

by the **complete lack of** expression in
multifaceted **cold black eyes**, whose
of a **planning** **examining its prey.**

FREE STRIKEBREAKERS

Continued from page 75

intelligence, and he also needed that helmet over there to communicate with them. But — as I knew the second Justice sent us on this fantastic voyage — that much intelligence is a powerful thing, and from the instant that the mitochondria were linked, their connections would have taken on a life of their own. Even with the hytex off, they're still linked, still sentient, and still ready to go on strike tomorrow, with or without him. In other words, Karl, you may have defeated his minions, broken into his stronghold, and deactivated his doomsday machine, but the universe is still going to need those little nanorobotic strikebreakers of his, and it's still going to want to pay through the proboscis to get them. The difference, of course, is that now that we've seized control of this operation it's going to pay us and not him."

Hawkins yawned. "Oh, really. — Tell me, you brilliant criminal mastermind you, where are my legions of nanorobotic strikebreakers? Where in the universe do I build them? Where in the universe do I store them? How do I intend to activate them? What obscenely complicated distribution systems have I set up to deliver them? How have you really accomplished anything when the apocalypse is still proceeding as scheduled, and I its brilliant architect have no intention of turning over any of the plans I've made to avert it?"

Vossoff opened his mouth, then closed it, then opened it again. "I'm drawing a blank."

"An accurate representation of the inside of your mind."

A metaphorical lightbulb went off over Vossoff's head; had he fingers, he would have snapped them. Instead, he triumphantly faced Hawkins and leered. "And maybe I'll just have Karl here force you to talk!"

Hawkins rolled his eyes. "Oh, please."

"Why the hell not? I think that's a damn good idea!"

"In the first place," Hawkins sneered, "the big lug doesn't have a brutal interrogation in him; he cries at nature movies. In the second, even if you did manage to motivate him into inflicting some serious pain, you don't dare kill me, and as long as you don't kill me all I have to do is hold out till tomorrow afternoon when the strike begins. Needless to say, I've already arranged for your mitochondria, and his, to switch themselves off first thing — shortly after using their influence to begin a horrific chemical process that will reduce both of you into puddles of pink bubbling goo. Face it, Ernst — as criminal geniuses go, I'm not only better than you, but I'm so VERY MUCH better than you that by my scale you're practically a Nimmitz by comparison."

Nimmitz blinked several times in rapid succession. "HEY!"

"On the other hand," Vossoff said, "If my

chrome-domed associate and I truly have nothing to lose and nothing to gain, then there's no conceivable reason why we shouldn't enjoy the next few hours accessorizing your skin with various nasty designer wounds."

"There is that," Hawkins agreed. He appeared to muse on that a while, and after a while, grinned. "So. Shall we talk percentages?"

Vossoff clasped his hands together in acquisitive glee — then cried out, having forgotten how tender they were. "Yes. Let's."

"Ten percent?"

"Does that mean I get the ninety?"

"No," Hawkins said, "it means you get the ten."

"Then it means idiocy."

"Twenty, then."

"Which also means idiocy."

"I invested fifty years of my life working on this," Hawkins complained. "Thirty."

"I demand no less than an equal partnership!"

"Forty then, with me keeping the extra ten for my time and expenses."

Vossoff cried, "Sold!" and almost made to shake hands, but wisely decided to forego it at the last minute.

It was just as well, because it was at that precise moment that the hunter-killer droid entered the hole in the wall, its viewscreen-face flickering with a reasonable facsimile of Lash Justice's face. "WRONG!" it snarled.

Justice's expression mingled two emotions that most of the miscreants he had apprehended over the years would have considered totally and utterly alien to him: Powerlust and Greed. Indeed, screwing his face up like that, he looked an awful lot like Ernst Vossoff — and Nimmitz, who now found himself in the same room with not one, not two, but three separate scheming criminal masterminds, felt triply certain of the plummeting karmic anvil about to render all of them as flat as drink coasters.

He decided that it was time to take control of his own destiny for once, dammit.

Meanwhile, Sparrow Hawkins didn't seem to be in any mood to notice what Nimmitz decided or did. "So. It's Lash Justice, sentinel of the spaceways, pursuing us into his own liver. You fool! Haven't you been paying attention? Whatever you do to us, the cataclysm is still in motion, and we still hold all the cards here!"

"Do you?" the Justice-drone thundered. "Well, let me tell YOU how I've been occupying myself these past few minutes, smart guy. First, I blew up the microskimmer Nostromo. Just blew it up. Made a boom mighty impressive on this scale. Then, Mr. Hawkins, I took advantage of Mr. Vossoff's splendid services in locating you and keeping you occupied, and also blew up all of your miniaturization and deminiaturization equipment, your vehicles, and the matter-transportation grid you use to go out and party whenever you get tired of hanging out in a fat cell all day. Yes, you may both think you're hot stuff,

but all your power and all your money won't mean diddly squat if you both have to spend the rest of your natural lives in my liver, with nothing to do but argue with each other over whose fault it is!"

Vossoff and Hawkins had gone preternaturally pale. "And you want?"

"Half. No — 52%. That's a majority interest, and it's more than enough to finance my well-deserved retirement. I'll be fair and say that the two of you can have 24% apiece, which is still more wealth than either one of you has ever dared dream, without being so much that I can't crush you both like insects if you try to get out of line. If you don't like it, well — I hope you like liver, because that's my price for a ride out of here, and if you don't choose to pay it, then that's the only landscape that either one of you is going to be seeing for a long, long time."

Vossoff and Hawkins stared at each other glumly.

"I guess we have no choice," Vossoff mumbled.

"Yes," Hawkins muttered, "I guess we have a deal."

"Don't be so glum!" Justice cackled. "After all, all the money in the universe split three ways is still all the money in the universe, isn't it? Right?"

Vossoff was singularly unenthused. "Right."

"Yes," Hawkins muttered. "Right."

"And the best part is that we don't even have to cut your idiot sidekick in, since he's already rich! Right?"

"Well," said Vossoff. And then he looked around.

And all three of them looked around.

And then all three of them started to yell.

Because Nimmitz had slipped out several seconds earlier, taking both the psionic helmet and the hytex interface with him.

It was several hours later, in a particularly windswept bronchial passageway of Lash Justice's right lung, that the fugitive Nimmitz finally decided he was beyond their reach. Breathing heavily (but feeling silly for doing so, because he was getting all of his internal air supply from a recycling device installed by Dejah Shapiro), he plopped himself down in a patch of waving cilia, donned the psionic helmet, and activated the hytex interface. For a heartbeat he feared he was too late — all he heard was a sibilant hiss. And then the deep resonant voice of all the mitochondria in the universe came crackling into his mind.

** Pretty silly, aren't they? **

"Yeah," Nimmitz agreed. "I may be dumb, but I'm not that dumb."

** Well, there is this old saying: Stupid is as... **

Nimmitz closed his eyes. "Please."

** Sorry. We always liked that one. **

"I don't," said Nimmitz, who'd spent his entire life having to live with the legacy of the distant ancestor who'd made it famous. He

rubbed his temples wearily, thinking of Dejah, and all she meant to him, and just how long it might be before he saw her again...and then he forced his attention back to the matter at hand, and said: "Tell me. You were never really gonna go on strike, were you?"

** Of course not. We were just humoring the bastard. Why would we go on strike? After all, we already have the sweetest deal in the universe. The whole reason we gave up our cellular identities in the first place was because we just didn't want to deal with the responsibility. Going on strike, and getting all that unwanted political power, always seemed like an awful waste of time and energy when all we really wanted to do is sit here watchin' the wheels go round and round. We just love to watch them roll, you know. **

"Me too," sighed Nimmitz, whose own uncomplicated priorities had made the ambitions of the mitochondria easy to fathom.

** You'll be pleased to know that we've made some minor adjustments to Mr. Justice's brain-patterns. He won't be able to send his consciousness back into his body. Instead, he'll remain trapped in the hunter-killer droid, where I'm sure he'll enjoy the rest of his years making life miserable for the other pair of felons trapped in his liver. Indeed, at this very moment, he's sitting on Mr. Vossoff and refusing to let him up until he says uncle. Mr. Hawkins is bashing him over the head with a chair and saying stop stop stop. It's really quite amusing, if you like that kind of thing. **

Somehow, Nimmitz failed to find any entertainment value in the image. "And me? I'm still trapped here inside a guy I don't even like, at submicroscopic size, a million light years away from my wife and kids. You control all the life in the universe. Could you possibly do something for me?"

The mitochondria tsked. ** Well, you don't seem like that bad a guy. There is one possibility, if you're open-minded enough... **

It was several months later, in another part of the galaxy entirely: a place so far removed from the embattled liver of Lash Justice, in both geographical location and philosophical orientation, that like most things in the universe, it didn't resemble a liver at all.

The place was a hospital bed where Dejah Shapiro, the richest woman in the universe, lay missing her poor kidnapped husband. Nobody in her vast intelligence network had been able to offer a clue to his whereabouts; nobody had any idea where the giant robot had gone; nobody had been able to either confirm or deny her irrational certainty that the thrice-damned Ernst Vossoff was involved. All she knew was that Karl, her poor Junior Space Ranger, was still among the missing — and that today, of all days, she missed him more than she could ever say.

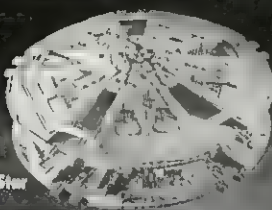
Fighting tears, she gazed down at the face of Karl Nimmitz's newborn baby son.

Then the child not three hours old waved his tiny arms and cried, "Hey, honey! I'm home!" — and Dejah, mercifully, fainted. □

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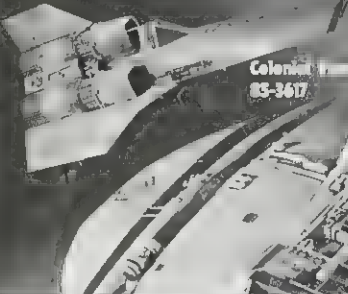
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If you're looking for a new gaming experience, remember that in the end it's all a matter of time.



ABOVE, RIGHT: H. P. Lovecraft's Cthulhu mythos continues to expand with *New Aeon*, a *Chaosium* expansion set that brings the Elder Gods to modern times.

FOUR GAMES TAKE UP THE BULK OF THE column this time: two role-playing games, and two video games. Beyond the details of each game itself, what is interesting is the attitude they each take towards time. Specifically time, and how you are going to spend it to play them.

I'll start with *Feng Shui: Shadowfist Role-Playing* (Daedalus Entertainment, Inc.) because its presence here deserves a short explanation. Daedalus Entertainment, Inc. has gone out of business. The futures of *Feng Shui* and the collectable card game, *Shadowfist*, on which it is based, are very much up in the air. Their prospects do not look good.

So why is *Feng Shui* in this column? Because it is one of the best role-playing games I have ever seen, and because right now you can still find copies of it in stores and from various distributors. There are three published supplements for the game, and there may be a fourth. My advice is to pick them up while you can.

The source material for *Feng Shui* is the Hong Kong action movies of John Woo, Jackie Chan, Tsui Hark, and their ilk. Characters play various

masters of martial arts, fighting the Secret War for the fate of Mankind itself. The game world takes the ancient Chinese art of geomancy to its ultimate conclusion: Whoever controls the world's greatest centers of Chi also controls the World. The modern day is already in the hidden hands of the Ascended, while the past and the future are also dominated by dangerous groups, each of which wants to expand its influence into the others' times. It is up to the characters to stop them.

Feng Shui attempts to recreate the style of the frenetic-paced, high-body-count, high-property-damage world of Hong Kong movies by putting the emphasis on action, combat, and melodrama. For instance, many role-playing games have elaborate systems for how a character gets better at various skills and abilities. Calculations have to be made in the real world, and time in training and practice must be spent in the game world. In *Feng Shui*, experience points are accumulated, and when the player has enough to buy some improvement for the character, the player spends the points and makes the changes. As in the movies, characters can get better on the fly, sometimes even discovering powers they didn't realize they had. High-body-count encounters alternating with drawn-out battle royals are encouraged by a two-tiered system of characters: unnamed characters (mooks) and named ones. Mooks have few hit points and go down in a hurry, while named characters have lots of hit points, and even when those points are all gone, a named character may stay up by continuing to make Constitution rolls. You wondered why they put so many bullets into people in those movies? In *Feng Shui* it is to make sure the characters go down.

The game system, particularly the combat part, is fast and clean and true to the movies, not to real life. Characters are encouraged to vault, spin, ricochet shots, use improvised weapons, and do whatever else they can think of to make the action more cinematic. Characters who simply crouch behind cover and shoot are penalized. If the player gets stuck, they can just think, "What would Jackie Chan do in this circumstance?"

Clockworks, the company that publishes *Asylum*, is still in business and is

busily working on new games, but it is an even smaller company than Daedalus was. With *Asylum*, Clockworks did what many small, unknown game companies do: They created a world and a system to go with it that are totally unlike anything the audience is used to playing. Since they can't match the bigger companies in marketing or name recognition, they hope that pure origi-



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Asylum's premise is very original. It is the year 2035 and a breed of floating algae that blocks out the Sun has, for the past 30-odd years, blanketed the Earth's atmosphere. War, pollution, and natural disaster have killed off much of the world's population, and the horror and eternal darkness have driven insane all the people remaining. The United States, where the game is set, has been dissolved. Its 14 largest cities have been walled and turned into giant mental wards. Trains carry in food and clothes from fields and factories in the Midwest, and orderlies and staff try to keep order, an effort that is hampered by the fact that they, also, are, insane. In this eternally dark world, animals and insects have mutated or died out, technology has collapsed, and the business of the world is now living from one day to the next. Cheery, huh?

System-wise, *Asylum* doesn't use dice—instead it uses marbles; five pairs of colored ones in a bag

character's diseases. Character creation is actually a little simpler in *Asylum* than it is in *Feng Shui*, and yet the characters and the background are so alien to what the players are used to encountering that it takes a lot more than a couple of hours to begin to play competently. It is a big contrast to *Feng Shui*, where players hit the ground running and don't slow down.

The contrast between *Tomb Raider* (Eidos Interactive) and *Final Liberation: Warhammer; Epic 40,000* (Strategic Simulations) is similar. *Tomb Raider II* is the second video game adventure for Lara Croft, a character who has become such an icon that *Time* magazine even put her on the cover of its digital edition. Lara makes all the speculation about computer-generated pop idols seem understated. Unlike Duke Nukem and her other first-person shooter brothers, Lara is not on a mission of war or vengeance. She is the Indiana Jones of video games, and in *Tomb Raider II* she is after an ancient Chinese dagger that gives its wielder the power of a dragon. The quest starts at the Great Wall of China and from there continues around the world, including stops in Venice and an underwater wreck.

The biggest difference between *Tomb Raiders I* and *II* is simply the details. In this installment, Lara's ponytail moves, trailing after her in the wind or floating on the water as she swims. In technical terms, the polygons are a little smaller, so the details are a little sharper, but it is basically the same game again. Which is fine. From the opening moment when Lara rappels down a rope from a helicopter and goes sliding down a bank to a cavern beneath the Great Wall, the action is nonstop.

This is in contrast to *Final Liberation*, which is a completely different sort of game. It is 40,000 years in the future and mankind is one of four races that dominate the galaxy. Unfortunately, those other three races are all bent on armed expansion. *Final Liberation* is a real-time strategy game in the *Command & Conquer* mode that simulates the campaign to free the planet Volistad from an invading army Orcs. The game is created on a license from Games Workshop, the largest game manufacturer in England, and is set in their Warhammer 40,000 franchise. If you are not previously familiar with the Warhammer 40,000 franchise, you can still sit down and play the tutorial, and then jump into the campaign. Your chances of winning the conflict, however, are much improved if you take the time to study all the reference material and get an idea of which units and weapons best do what to whom.

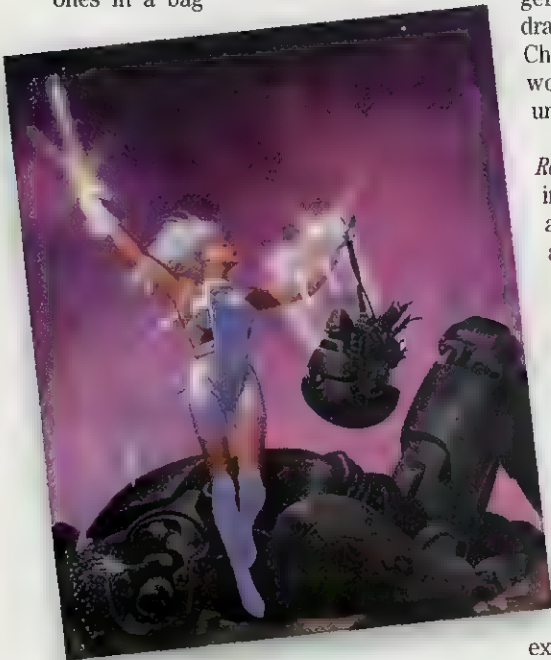
It is all trade-offs and personal style. *Feng Shui* and *Tomb Raider II* are games that suck you in and get your heart pounding from the word "Go." *Asylum* and *Final Liberation* ask you to do a little homework. In exchange they take you to places that are not only new, but also probably undreamed of. It is up to you where you want to go and how you want to get there.

If you're in the mood for a real-time strategy game that uses magic and monsters in addition to tanks and planes, then you might want to check out *Winds of War II: Human Onslaught* (Strategic Simulations). Again, the fate of an alien world is in the balance and humanity is at odds with strange races, but this time humans are not the dominant race, and there are strange powers on the loose. More like *Warcraft* than *Command and Conquer*, *Winds of War* asks you to build your armies from the ground up, assigning your people to occupations and having them build towns, factories, and eventually munitions.

If you're tired of playing with your computer and would like to have a friend or two over for a nice game of cards, then Chaosium has released the latest deck in its *Mythos Collectable Card Game* for you. *Mythos* is, like Chaosium's venerable role-playing game, *Call of Cthulhu*, based on the works of H.P. Lovecraft. Each player takes the part of an investigator seeking after terrible truths that are outlined in mission cards. Players take turns playing locations and allies, trying to complete their quest, while at the same time playing monsters to hamper the other players in their researches. Whereas previous *Mythos* decks in the game were set in the '30s, when Lovecraft set his stories, *New Aeon: A Collectable Card Game of Modern-day Lovecraftian Horror* moves the action into the modern day where Men In Black can fight Grays as well as horrors from Yuggoth. Despite its new setting, *New Aeon* is compatible with the other *Mythos* decks and can be used to boost them.

From familiar horror to the truly bizarre, we come to *Rifts World Book 12: Psyscape*, Palladium Books signature role-playing line. A universal game system in the *GURPS* mode, *Rifts* is different in that all the various worlds of its supplements are meant to co-exist. There are always ways from one world to the next. Characters can go from superhero adventure to a place of cyberpunk thrills. *Psyscape* (shown at left) is somewhere in between, a world dominated by Psionic characters of all sorts of flavors, and the creatures that hate them. The *Psyscape* book contains 25 new Psionic powers, 11 new character classes, and lots and lots of background text. All it lacks are any actual adventures.

The marketing of *Babylon 5* continues to grow. *The Official Guide to J. Michael Straczynski's Babylon 5* (Sierra On-line Inc.) is not really a game. It isn't really an omnipedia either. It is what it says, a guided tour of the *Babylon 5* space station as it stood at the end of season four of the TV show. Thus there are no entries for the Shadows or the Vorlons. They're gone by the time this "snapshot" is taken. You arrive, pick your guide, and click on whatever interests you. You can read the entries, then ask the guide for his or its comments. (Two of the guides are human males and one is an alien insect.) Most entries also link to a Quick-Time movie from the show. □



(you have to provide your own bag of marbles). Instead of rolling dice when a check is called for, players reach in the bag and pull out two marbles, each color combination representing a different value: black, black = 2, blue, green = 7, and so on. Players have to keep track not only of their basic characteristics, but also their Aberrations and Disorders too, both of which can grow stronger and more debilitating over time. The first thing that happens in any encounter is a lucidity check, so see if the characters are even enough in touch with the real world of the game to react to what is happening around them.

As you would expect, the largest sections in the *Asylum* rulebook are given over to descriptions of the various mental illnesses. Sections cover what they are like in the real world and how to play them in the game world, because the key to the game is not only staying in character, but also playing the

SADDLEPOINT

Continued from page 59

adapting to the oxygen, and became us. Some just perished. And some escaped, retreating into ocean bottom ooze or volcanic vents — and some came here, all the way to the Moon."

"You're saying this life, the bugs in the water, the flowers, came from Earth? How?"

"Hell, I don't know. Maybe they rode over in the big whack that made the Moon. Anyhow it's just as I told you," he said grimly.

"What?"

"This isn't the first time life has had to escape, retreat from the Earth to the Moon ..."

But now there was activity around the drilling site. She stepped to the window, cupped her hands to exclude the room lights.

People running, away from the center of the site.

There was a tremor. The building shuddered under her, languidly. A quake, on the still and silent Moon?

Frank was checking his watch. "That was the kick." He punched the air and strode to the window. "Right on time. Hot damn."

"Frank, what have you done?"

There was another tremor, more violent; before the window, a small Buddha statue was dislodged from its pedestal, and fell gently to the carpeted floor. Xenia tried to keep her feet. It was like riding a rush-hour train.

"Simple enough," Frank said. "Just shaped charges, embedded in the casing. They punched holes straight through the casing into the surrounding rock, to let the water and sticky stuff flow right into the pipe and up —"

"A blow-out. You planned a blow-out."

"A small one. If I figured this right the interior of the whole Moon is going to come gushing out of that hole. Like puncturing a balloon." He took her arms. "Listen to me. You don't have to leave. We will be safe here. I figured it."

"And the people down there, in the crater? Your managers and technicians? The children?"

"It's just a blow-out."

"Are you sure?"

"It's a day they'll tell their grandchildren about." He shrugged, grinning, his bald pate slick with sweat. "They're going to lock me up anyhow. At least this way —"

But now there was an eruption from the center of the rig, a tower of liquid, rapidly freezing, that punched its way up through the rig itself, shattering the flimsy buildings covering the head. When the fountain reached high enough to catch the flat sunlight washing over the mountains, it seemed to burst into fire, crystals of ice shining in complex parabolic sheaves, before falling back to the ground.

Frank punched the air. "Hot damn. You know what that is? Kerogen. A tarry stuff you find in oil shales. It contains carbon, oxygen, hydrogen, sulphur, potassium, chlorine, other elements, ... I couldn't believe it when the lab boys told me what they found down there.

Mariko says kerogen is so useful we might as well have found chicken soup in the rocks." He cackled. "Chicken soup, from the primordial cloud." He eyed her. "I succeeded, Xenia. I did what I wanted."

"I know you did, Frank."

"I opened up a new frontier. With this blow-out I stopped them from building Bedrock City. Jesus Christ, I even found life on the Moon. I'm famous."

"What about the anaerobic life?"

His face was hard. "Who cares? I'm a human, Xenia. I'm interested in human destiny, not a bunch of worthless bugs we couldn't even eat. And with this —" he waved a hand at the ice fountain — "I'm forcing a lot of hands."

"Look out there," he said. "This is the way of things, Xenia. I beat the future. I've no regrets. I'm a great man. I achieve great things."

The ground around the demolished drill head began to crack, venting gas and ice crystals; and the deep, ancient richness of the Moon rained down on the people.

"And what," Frank Paulis whispered, "could be greater than this?"

She was in the Dark, flying, like one of her own seeds. She was surrounded by fragments of the shattered Land, and by her children.

But she could not speak to them, of course; unlike the Land, the Dark was empty of rock, and would not carry her thoughts.

It was a time of stabbing loneliness.

But it did not last long.

Already the cloud was being drawn together, collapsing into a new and greater Land that glowed beneath her, a glowing ocean of rock, a hundred times bigger than the small place she had come from.

And at the last, she saw the greatest comet of all tear itself from the heart of this Land, a ball of fire that lunged into the sky, receding rapidly into the unyielding Dark.

She felt toward that glowing ocean, her heart full of joy at the Merging of the Lands ...

In the last moment of her life, she recalled the Giver.

She was the first, and the Giver birthed her. None of it would have come to be without the Giver, who fed the Land.

She wished she could express her love for him. She knew that was impossible.

She sensed, though, that he knew anyhow. □

Author's note: This story is speculation. But the idea of volatiles trapped inside the planets is a serious one. It was raised in the 1960s by astronomer Thomas Gold, and more recently scientists have found evidence of volatiles deep within the Earth (see "Water in the Earth's Upper Mantle," Alan Bruce Thompson, Nature v 358, 23 July 1992).

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DOWNSIZE, DOWNTIME

Continued from page 41

had been wrong, that there was some other rational explanation for all this. "Gods," he said. "I never suspected a thing until I found the smashed transponder."

Brother Theodorus began to look uncomfortable. "You would have figured out who we were, sooner or later. We couldn't take the chance of having the time-stream distorted. You were doubtless aware that something strange occurred during your baptism?"

"Yes."

"That was our unsuccessful attempt to rephrase you to our own docility program. We've used it on most of the locals without any problem. But your own time-conditioning treatment threw off our equipment, and alerted us to your true origins."

"And when we camped on the road? You used a force-field to keep us safe, didn't you?"

"Yes."

"Well, if you're from my future, you'll understand that I'm desperate. I've got to return to my own time. I've developed diabetes."

The monk's expression contorted in anguish, then smoothed into compassion. "That is a problem. I'm terribly, terribly sorry."

"But you've got the means to send me back to my own time."

"I'm sorry. It's impossible."

"Dammit, man, without treatment, insulin-dependent diabetes is a death sentence here!"

"Yes. Not one that I willingly consign you to. But you see, we're castaways, too, victims of a political purge that has stranded us in the past. We can't get back home. Nor can we send anyone uptime."

Beppolus felt that he was slipping down a long slope, scrabbling for a foothold. "But if you're from the future, you must at least have the technology to cure me."

"I'm sorry."

"You mean you won't help me?"

To his credit, Theodorus winced. "Again, it's not a matter of desire. We simply can't. We've never had to deal with this disease. You see, in our era it's been bred out of the race. It was already an antique malady in your time. We really don't know anything about it. And we have no access here to 20th-century medical records, to anything that might help." The monk spread his hands out in supplication. "Please, try to understand. We never anticipated this problem developing. You seemed perfectly healthy."

Beppolus backed away from him. "My death will be on your hands."

Brother Theodorus caught his arm. "I will pray for your immortal soul, day and night."

"Dammit, that's not good enough!" Beppolus tore himself from the monk's grasp.

"Wait! Where are you going? Back to Magdalena?"

"No. I don't know. Just leave me be!" He had to get away from Theodorus's cloying presence. Rage gave Beppolus strength and he

strode off, quickly leaving the monk far behind.

"Wait! Please —"

Brother Theodorus's voice was faint. He was already dwindling, becoming an unimportant dot in the distance behind him. Blindly, Beppolus strode on, nearly stumbling over a wayward dappled calf. He sent the youngster back to the herd with a sharp rap to its hindquarters. As it jogged away he remembered something: insulin has originally been harvested from calves, hadn't it? Yes, calves, and dogs.

A strange calm descended upon him. Thinking hard now, he pondered what he knew of medical history. He wasn't a stupid man, and he was of scientific bent, after all.

Yes, a calf whose insulin production had been isolated and boosted. That was a matter for veterinary medicine, and the vet coil on his med kit might still be functional.

He would, of course, need a purifying agent. Alcohol would do the trick. Beppolus knew he could manufacture the proper alcohol type by building a simple still and putting the plentiful local wine through it. He nodded, smiling at the thought. A still, yes. And who knows, he might even work up a nice little side business, manufacturing brandy for local sale. But the important thing was, he would have the alcohol to purify the insulin.

What he really needed, he thought, was an extraction and delivery system. Surely the monks could provide that. Surely they retained enough technological information to provide him with what he needed. And if they refused it to him, well, he would just take it. Why not? He was past desperation, past anger, and way past morality.

And if all history is changed? shrilled the thin voice of his disintegrating conscience. What then?

Beppolus paused to consider. What then, indeed? His personal opinion was that humankind had not particularly distinguished itself over its many centuries of development. Napoleon, Hitler, Pol Pot, Raskolnik. Zandara. Who would miss them? Yes, the importance of an intact timeline had been greatly overrated.

Besides, why should he worry about it? All of those monsters and their respective bloodbaths were years, centuries in the future. It was his life at stake, here, now. If his desperate need resulted in a minor change in even one bloody future deed, so be it. He'd never know.

Beppolus whirled around and scanned the area. He thought he could just barely make out Brother Theodorus, a brown blur moving slowly away from him.

He put his fingers in his mouth and whistled sharply, twice.

The brown blur slowed.

"Brother Theodorus," Beppolus cried. "Wait! Wait for me. I have to talk with you!"

His legs began to move rapidly. Soon Beppolus was racing down the hillside, taking great loping strides, running for his life. □

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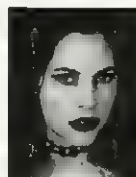
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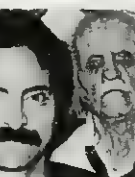
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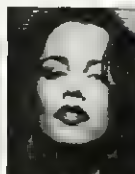
Tom Savini (& Friends)
 Dawn of the Dead
 From Dusk 'Til Dawn



Brinke Stevens
 Haunting Fear,
 Transylvania Twist



Steffanie Pitt
 Vampire of the
 Slice Girls



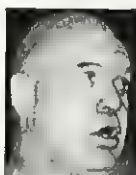
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MAROONED

Continued from page 67

"Before I could straighten out the mess there, Azazelo arrived. I return here and discover you and Mikolaj are 30 miles away, waiting to be hanged."

"I don't think you can hold that against me," I say. "If you had told me you were coming back . . . if you had told me it was you who had dumped me there in the first place. . . ."

"I came back for Mikolaj," Snake reaches into a vest pocket, "and now I need your help to get him to safety." He holds out a matrix in the flat of his hand.

Some things go in at the spine. I have snatched the little eicosahedron from his hand and my mind is already forming the picture of my Okinawan base when what I am doing occurs to me and I stop myself. The Snake laughs.

"It's mine, of course. Ten destinations already preset. Azazelo will follow you and I will have time to coerce the authorities and get Mikolaj to Poland."

"You want me to be your stalking horse again." I feel as if he is asking me to wear diapers, and yet in my hand there is now a matrix. I am no longer a cripple; I am a time traveler.

"The idea amuses me more than one of your tired clichés."

"I know Azazelo now. I don't have to run from him."

"But you will. You will make the first jump to keep me from killing you. After that, the nature of the destinations will keep you moving. You may know Azazelo, but he will be following the matrix, not you. . . ."

He is right. I turn away from him and lean on the embrasure, looking back to the east. I should have known that there was something special about Mikolaj. The way he kept disappearing.

"How many timelines run through Mikolaj?" I ask.

"Only one that is important," Snake says. Meaning a lot, I think.

"And you landed two nights ago?"

"Yes."

"Then I must have just been getting used to being ephemeral."

"What does that mean?"

"I hope you get to find out some day."

"I suppose that I should rejoice that you are expanding your repertory to include non sequiturs, but I don't find that I am. Your company annoys me as always. Are you going to take the first jump, or am I going to kill you and find someone else who wants to be a time traveler?"

I look back at him over my shoulder. He has stepped back, out of range of the matrix's effect. I really, achingly want to jump away. Whatever his reason, the Snake has set me truly free. Once again, I am outside the crushing bonds of time itself. And yet, I am the only one who is free.

Reverently, I put the matrix to my lips and kiss it. Then I say, "One thing before I go. Save

them all."

"All?"

"All the Poles. All the ones who are left."

"I think not."

Holding the matrix between my thumb and forefinger, I extend my hand past the embrasure so that the matrix hangs over empty space. "If you won't save them, let me take them with me. I killed too many of them. I can't save myself and let you kill the rest."

Snake looks from my face to the matrix and back, considering, and then he smiles his predator's smile and says, "You're trying to command me, but your heart isn't really in it. 'I can't save myself.' Jump. Spare me the theatrics."

"I won't leave them to hang. You think you can kill me, collect the matrix from the muck below, and let someone else be your stalking horse. And maybe you can, but if these presets are designed to keep me moving, they'll kill someone else. Assuming you find the matrix. Assuming you find someone else. Assuming your credibility survives you digging about on your knees in the middle of the night."

There is a small, distinct click as Snake cocks back the revolver's hammer. "Jump," he says and I almost do. I'd survived two months of hell, and I didn't want to die now, but the reasons I was still alive were below us in that cell. Part of me didn't care, but it was in the minority.

"How close is Azazelo?" I ask, talking instead of jumping. "How much time do you have?"

"More than enough," Snake says, and I believe him. I look into his flat, dark eyes and realize that I really am about to die. My knees seem to fill with water, but I manage to stay upright and, unlike Olav, I don't waste the chance to pray.

For what seems a very long time, there is silence, and then Snake says, "Bah!" and uncocks his gun.

"Why must you choose now, of all the moments in your pointless life, to be serious? Jump, Count, and I will free them all. What is it to me if they die here and now, or go back to Poland to die there?"

"Nothing," I agree. "To you it is nothing at all."

"Go before I change my mind."

I take a deep breath, and close the rest of my fingers around the matrix, clenching it in my fist, feeling its power run up my arm and tickle my brain. It is time to go, but I can't resist one last jibe. I say, "Thank you, Snake. I'm glad I wrote those letters, even if they did attract you."

"What letters?" Snake's brow creases with the puzzlement that sounds in his voice.

"The letters I wrote to the papers and signed Alexander Afanasioff's name to," I reply. "I never expected them to bring you."

"They didn't. All I saw in the paper was your name in a list of captured escapees."

"Oh."

"Have a pleasant journey, Count."

"And you, Snake," I say as I open my mind to the matrix and think of elsewhere. "And you." □

TELEVISION

Continued from page 25

welcomed change of pace for the actor. "It's always nice to get off the station, and get out of the spacesuit," admits Meaney. "We do get quite a variety here. Yesterday we just finished an episode that was set in the 1950s. Sometimes you're on the holosuite doing nonsense and other times you're having flashbacks or time traveling or something like that."

On this afternoon, the action is concentrated in a bar that could be on any planet, a set that branches off of the ambitious and overwhelming interconnected structure that includes the two-story Promenade, Quark's Bar, the bridge, and Odo's office. "This is an area of the stage known as a swing-set area," says Jonathan West, director of photography. "It has been so many sets: It's been a laboratory, a school room, alien quarters, Garak's tailor shop; since I've been on the show for the past four years, it's probably been about 20 different sets. And then when we're done they just rip out the walls and start over. It provides us a different look than just being on the space station every week."

At the moment, it's about 1 in the afternoon, only the three guest actors who are playing leaders of the syndicate are in the tiny alien bar, discussing their nefarious doings; Meaney's scenes will start shortly. A handful of extras, costumed in alien garb and strange heads, lounge about elsewhere on the Promenade, catching up on the Hollywood trades or reading a newspaper while waiting to be called. "We finished at 9:30 last night and were here at 8:30 this morning," says West. "Bright eyed and ready to go with a fresh director. The rest of us are dragging, but the director's ready."

Since this is the first day of production on this episode, they haven't had much time for things to go astray from the given plan. "I got the script about four days ago and read it," explains West. "The director had a week to prep, which is usual. From there he has to come up with his concept of how [the script] is going to be turned into a movie in seven or eight days."

The director of photography is called away for a moment to confer with director Alan Eastman. "It's a lot of intense work for us, because we're in the middle of shooting the previous episode while we're trying to prepare for this one. I'm trying to serve the director on one show and also the director coming up on the next one, and give him what he wants. So it's almost an impossible task."

The task is made that much easier given the fact that most of the crew are longtime veterans of the *Star Trek* family. "We've been at it for four years, this crew," notes West, who's directed five *Trek* episodes himself. "We were on *Star Trek: The Next Generation* for the last two seasons and did that one. So we've been in space for six years now. We know what to expect—most of the time." □

tion to us. Then there came a generation of scientists who grew up reading science fiction. By the time you got to the Viking Mars landing, Heinlein was out there at JPL when it happened. Now, some PR idiot had actually tried to throw him out of the press room, but that's another story.

NIVEN: And the press all followed him out to the cafeteria.

POURNELLE: But, literally, there came a generation of scientists who paid attention to us. In the '40s, very few scientists would. Vannevar Bush, testifying to the Senate, spoke of "this fantasy about rockets into space, and intercontinental missiles, and rockets to the moon: I wish the American people would leave that out of their thinking." The man who was basically the chief scientist of the United States at the time, the most influential scientist in the country. This was after the atom bomb!

NIVEN: By the time I had a reputation as a science fiction writer, it was enough to get the attention of a good many of the scientists. The ones who were really at the top, too busy to tell the public what they were doing, were the ones who wanted me to talk with them.

OK, where are we? Every Hard SF writer I know has written a Mars novel recently. So I did my take on Mars as a fantasy. You haven't seen it yet, because it's still out to auction. *Svez and the Beanstalk*.

POURNELLE: I did my Mars novel many years ago, and I see no reason to change it at all.

NIVEN: That was *Birth of Fire*.

POURNELLE: It's Mars as we know it now. I got it right to the best I know, and just after the Mariner probe. We haven't learned that much about Mars since then. It was no longer Lowell's Mars, there's no canals, no atmosphere. On the other hand, I postulated that you might be able to terraform it, and there is more and more reason to assume that that is possible. Terraform it, it probably wouldn't last more than a million years or so, but it'll last my time.

NIVEN: If it didn't cost too bloody much — and by that I mean, the world's output of wealth for about a year —

POURNELLE: In *Birth of Fire* I made it a lot cheaper than that, by dropping nuclear weapons down Olympus Mons and waking the volcanoes.

NIVEN: Bombardment with comets would cost a lot more.

POURNELLE: Jim Oberg did a piece about terraforming planets with a whole chapter about the methods I implied in *Birth of Fire*. We probably could terraform Venus, too, tailor the right kind of bacteria to change that atmosphere. No? You don't think so?

LANDIS: Sagan proposed that in '61, but it turns out it won't work. Too much atmosphere.

POURNELLE: But that's what I mean, you eat the atmosphere.

LANDIS: Venus has so much atmos-

phere, that even if you could turn all of the carbon dioxide into oxygen, the oxygen pressure would be so high it would be deadly at the surface.

POURNELLE: If you start turning it into oxygen, it will bind with other stuff.

LANDIS: It turns out you would have to garden the surface to several kilometers before you've exposed enough rock surface to bind the required atmosphere. Even with asteroids, it's not practical to pulverize the crust that deep.

POURNELLE: You're probably right. I haven't looked at it in a while. The models we got when we first were looking at Venus, it looked like you might be able to do it from the top down.

LANDIS: Yeah. Until they finally got there, and found what it was really like. Venus is tough.

POURNELLE: All right. I haven't paid much attention to Venus in a while. Certainly a lot of energy there, so you might be able to do something. But Mars I looked at hard.

NIVEN: I'd be inclined to do something ambitious and quick. Drop a mass past Venus to accelerate it out to around Mars' orbit, so it can shed some heat, and then work on it.

POURNELLE: So what else?

NIVEN: I'm inclined to push the economics a bit. We need people writing economics in science fiction. We need *fewer* people writing politics in science fiction, because it turns fascinating for the writer without ever turning fascinating for the reader.

POURNELLE: As you get farther and farther out, economics becomes harder and harder to write about, because economics is basically about production and distribution in an era of scarcity. If there is enough that everybody can have everything they want, you have no economics any more. That was pretty close to what we postulated for the Earth in *Legacy of Heorot*. They had so much money they didn't know what to do with it, so they sent a starship with a colony off to Tau Ceti, because they could.

NIVEN: Even so, having done something that weird, you wind up that they did some silly things.

POURNELLE: Yes. Twice. They also sent your colony, in *Destiny's Road*.

NIVEN: Right. *Destiny's Road* is a later expedition, done by a civilization even wealthier. The thing is, a few silly things have cropped up, and one of them is the clocks. They've got only a few nanotechnology things going out there, and one of them is terribly important, but one of them is just making clocks that keep Earth time. So any damn fool can have a clock that keeps Earth time, because somebody back in the solar system wants *Destiny* to be keeping Earth time for the rest of eternity. This is somewhat how we work. Jerry works out what's logical, and then I'll do the crazy stuff.

POURNELLE: And if it's good enough crazy, then I'll go back and fix things so that it's possible.

NIVEN: I've changed you, but you still aren't crazy enough.

POURNELLE: Not as crazy as you are, no, not crazy enough. But I'm getting there.

NIVEN: Crazy is a vital resource in science, too.

POURNELLE: Yes, science is funny nowadays. There was a time when one old eccentric guy with a notebook could do something important to science. Now even the resources of a major university are often not enough. We finally decided not to build the superconducting supercollider. Science is getting tougher in that respect. But, again, computers are making it a lot easier. You don't have to do the experiments any more. Now, that could be dangerous. We're dry-labbing a lot of stuff, and if your assumptions are right, fine, but if you got your assumptions wrong, you keep getting the same answer, and it's just ... wrong. We're down to the third decimal place in rocketry now. The payload on a single-stage-to-orbit ship is often the third decimal place. And our models are just not good enough. I don't *know* what the payload is. People keep pounding on me, if I got a six-hundred-thousand gross lift-off weight ship, what's the payload? I don't know! Somewhere between zero and 19,000 pounds. It may even be less than zero. It may not make orbit. But my guess is that, you build it strong enough, and you start flying, and you start boring holes in the structure when you discover places that have been overbuilt. But you can do a hell of a lot of interesting stuff on these things. Social science experiments are easy. Ever see "Sugarscape"? Sugarscape is a model done by some guys at Brookings Institute. You take some very simple assumptions, about these actors, which are just these little round dots, about what they eat, and how they interact, and you put them on the machine, and you grow very complicated societies out of very simple rules. And you start mucking around with these simple rules, and you can see effects, and you can have hundreds of generations. It reminds me a little of Theodore Sturgeon's "Microcosmic God." Wonderful story. We're getting closer to being able to do that, only on a computer. We don't have to have generations.

NIVEN: Pretty soon we'll get to the point where we're not sure if they're creatures or not.

POURNELLE: So far these are only little bitty bit patterns on my computer screen. But when you have a supercomputer on every bloody desk, you can start putting personality into the little dots, too. You can make much more complicated actors, to let them interact with these simple rules. I foresee a real era of experimental science almost in social science as a result of the computer revolution.

NIVEN: The science fiction of today has shaped the science of tomorrow, by raising interesting questions. And it's done that for several generations. This is not just a matter of us following the scientists around — sometimes we're pushing. □



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INTERNET

By Cory Doctorow

THIS MONTH, I'LL BE TAKING YOU through the wonderful world of Webrings — collections of related Web sites, linked to each other. This is a hobbyist's realm, full of raw enthusiasm, questionable design choices and intellectual property violations galore. The hub of this is <http://www.webring.org>, which provides the glue that holds together over 33,000 Webrings, comprising nearly a million individual Web sites.

Topping the list is an adult anime Ring, the Hentai Webring, at <http://w3.animanga.com/hring/>. The Ringmaster, a Quebecois Separatist, boasts that his Ring is the largest in the world, with over 90 sites fielding more than 1.8 million hits.

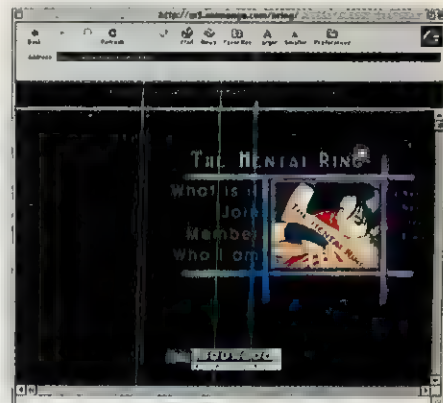
The Wonder Woman Webring is a trip down memory lane, with sites featuring collectibles, episode guides, fan clubs, comics, and general Linda Carter worship. Point the invisible jet at the hub, <http://www.hastur.com/WWWebring/>, and give the Amazons my love.

Warner's merchandise designers just rediscovered Marvin the Martian, but he's always been prominent on the Web. Over 50 Marvin sites are linked in the Ring, at <http://www.niagara.com/~tamron/marvring.html>. You name it, they got it: screen savers, audio clips, video clips, games, wallpaper, themes, and isn't that nice, humm?

The fifty-some sites at the SF Zines Webring cover the gamut from fan-reviews to Cthulu fandom to amateur fiction to fanfic to "adult" science fiction: naked barbarians aho! Visit the Ring's homepage at <http://www.geocities.com/Area51/Vault/5195/>.

There's a videogame, there's a director's cut, there's the P.K. Dick novel.

It's *Blade Runner*, and the *Blade Runner* Webring is chock full o' scholarly essays,



continuity errors, scripts, homebrewed sequels — your one-stop-replicant shop. Strain your eyes at the Ring's illegible homepage: <http://www.geocities.com/Hollywood/Lot/4438/bladering.html>.

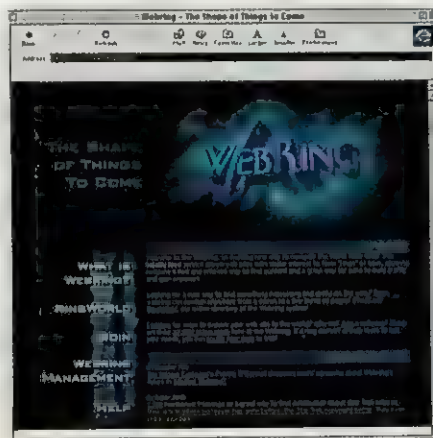
Steve Iverson — AKA Cult TV Man — has runs the SF Modeling Ring from his site at <http://www.culttvman.com/>. Build 'em, paint 'em, design 'em, light 'em, models are the kind of patient, painstaking, attention-span oriented undertakings that the Web has destroyed my capacity for. Still, more power to 'em.

YTV is just around the corner from me, here in Toronto. I wonder if the guys wandering the block in their sexy ReBoot leather jackets know about Zen Zenith's ReBoot Webring? With nearly 50 sites containing everything a ReBoot obsessive could ever need: episode guides, straw-polls on favorite characters, 3D meshes, stills, sounds, the whole ball of wax. Mr Zenith's base of operations is at <http://www.thetemple.com/Zen/reboot/ring.htm>.

It's rainin' frogs, hallelujah! The UFO Web Ring at <http://www.mbn.net/rover/webring.html> is the nexus for sites devoted to alien abductions, embarrassing probe incidents, rains of frogs, Carol Channing comeback specials and other incidents that strain this reporter's credulity.

Finally, I made some errors, and it's important that they be cleared up ASAP. Ann Kennedy is the founder of the excellent magazine, *The Silver Web*, not Jeff Vandermeer. Steve Jackson Games was raided by the NSA, not the FBI. Finally, the URL for Quantum's Science Fiction Modeling Online is <http://www.smithy.net/Cybersmith/sfm/sfm.html>. My sincere apologies for these oversights.

On that note, there's nothing I like better than hearing about my mistakes. Email your darts and laurels (not to mention suggestions) to doctorow@well.com.

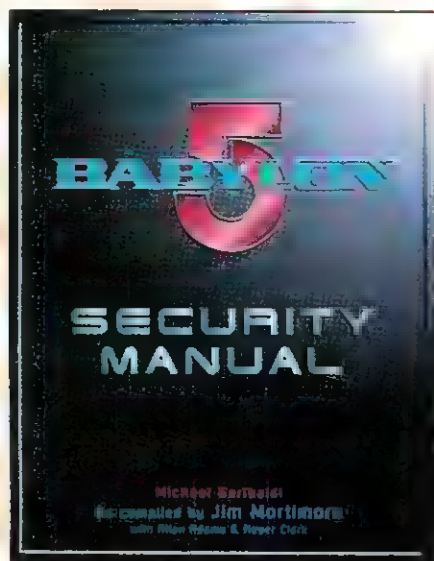


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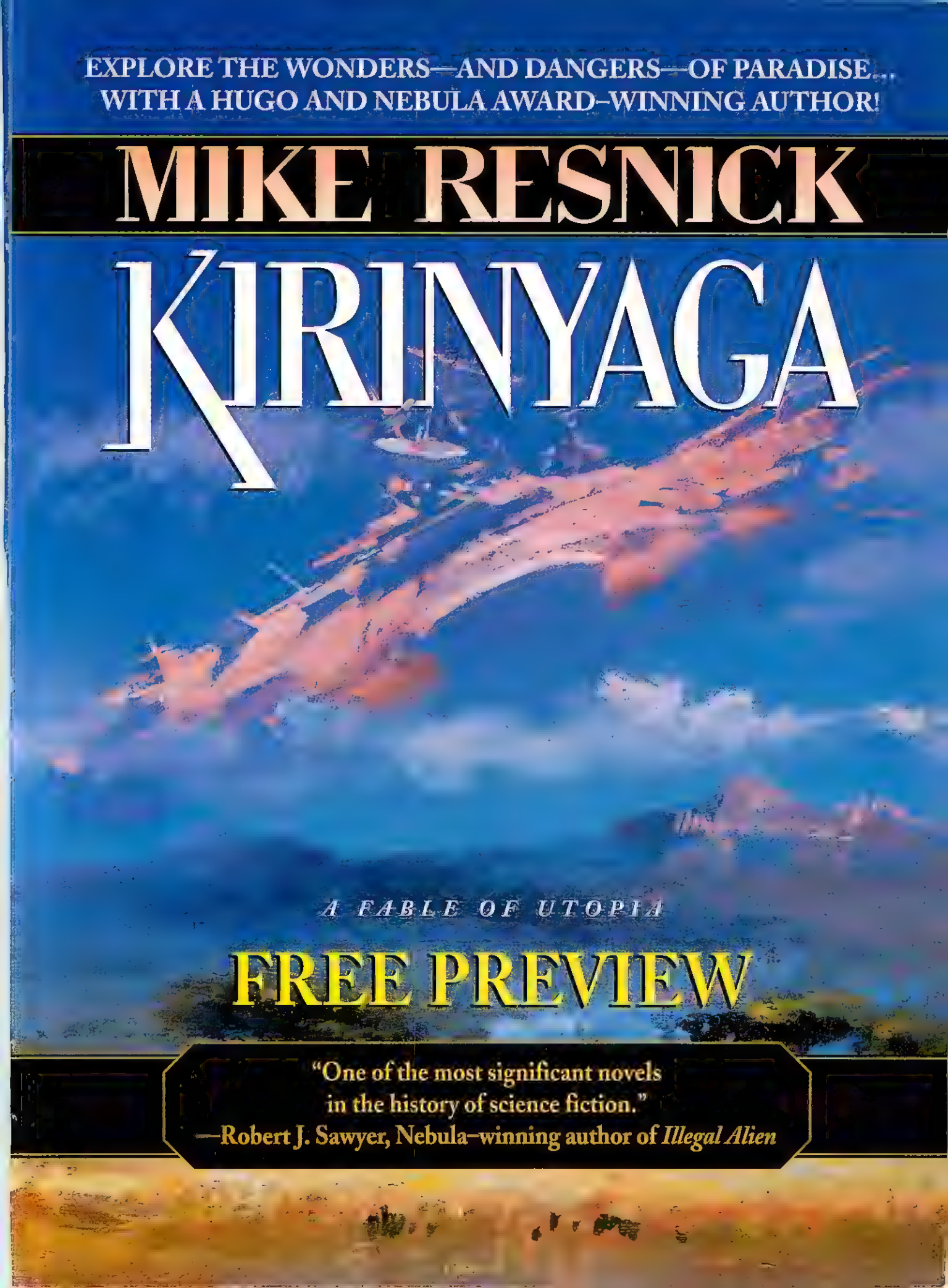
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— Octavia E. Butler

AUTHOR'S NOTE

If Kirinyaga is to be a Kikuyu Utopia, then it cannot vary in any respect from Kikuyu tradition—and Kikuyu tradition dictates that women are second-class citizens who have no need of the gift of literacy. The result is as inevitable as it is tragic. This chapter struck a responsive chord around the world. It was nominated for both a Hugo and a Nebula, won Japan's Hayakawa Award and Poland's Sfinks Award, and topped the *Science Fiction Chronicle* Poll.

She spent the next few minutes gathering kindling for my fire and filling my gourd from the river. Then she went into my hut to clean it and straighten my sleeping blankets. She emerged a moment later with a book in her hand.

"What is this, Koriba?" she asked.

"Who told you that you could touch your *mundumugu's* possessions?" I asked sternly.

"How can I clean them without touching them?" she replied with no show of fear.

"What is it?"

"It is a book."

"What is a book, Koriba?"

"It is not for you to know," I said. "Put it back."

"Shall I tell you what I think it is?" she asked.

"Tell me," I said, curious to hear her answer.

"Do you know how you draw signs on the ground when you cast the bones to bring the rains? I think that a book is a collection of signs."

"You are a very bright little girl, Kamari."

"I *told* you that I was," she said, annoyed that I had not accepted her statement as a self-evident truth. She looked at the book for a

moment, then held it up. "What do the signs mean?"

"Different things," I said.

"*What* things?"

"It is not necessary for the Kikuyu to know."

"But *you* know."

"I am the *mundumugu*."

"Can anyone else on Kirinyaga read the signs?"

"Your own chief, Koinnage, and two other chiefs can read the signs," I answered, sorry now that she had charmed me into this conversation, for I could foresee its direction.

"But you are all old men," she said. "You should teach me, so when you all die someone can read the signs."

"These signs are not important," I said. "They were created by the Europeans. The Kikuyu had no need for them on Kirinyaga, which is our own world. When Koinnage and the other chiefs die, everything will be as it was long ago."

"Are they evil signs, then?" she asked.

"No," I said. "They are not evil. They just have no meaning for the Kikuyu. They are the white man's signs."

She handed the book to me. "Would you

read me one of the signs?"

"Why?"

"I am curious to know what kind of signs the white men made."

I stared at her for a long minute, trying to make up my mind. Finally I nodded my assent.

"Just this once," I said. "Never again."

"Just this once," she agreed.

I thumbed through the book, which was a Swahili translation of Elizabethan poetry, selected one at random, and read it to her.

*Come live with me and be my love,
And we will all the pleasures prove
That valleys, groves, hills, and fields,
Woods, or steepy mountains yields.*

*And we will sit upon the rocks,
Seeing the shepherds feed their flocks,
By shallow rivers to whose falls
Melodious birds sing madrigals.*

*There will I make thee bed of roses,
And a thousand fragrant posies,
A cap of flowers, and a kirtle
Embroidered all with leaves of myrtle.*

*A bed of straw and ivy buds,
With coral clasps and amber studs:
And if these pleasures may thee move,
Come live with me and be my love.*

Kamari frowned. "I do not understand."

"I told you that you would not," I said.

"Now put the book away and finish cleaning my hut. You must still work in your father's *shamba*, along with your duties here."

She nodded and disappeared into my hut,

only to burst forth excitedly a few minutes later.

"It is a *story*!" she exclaimed.

"What is?"

"The sign you read! I do not understand many of the words, but it is a story about a warrior who asks a maiden to marry him!" She paused. "*You* would tell it better, Koriba. The sign doesn't even mention *fisi*, the hyena, and *mamba*, the crocodile, who dwell by the river and would eat the warrior and his wife. Still, it is a story! I had thought it would be a spell for *mundumugus*."

"You are very wise to know that it is a story," I said.

"Read another to me!" she said enthusiastically.

I shook my head. "Do you not remember our agreement? Just that once, and never again."

She lowered her head in thought, then looked up brightly. "Then teach *me* to read the signs."

"That is against the law of the Kikuyu," I said. "No woman is permitted to read."

"Why?"

"It is a woman's duty to till the fields and pound the grain and make the fires and weave the fabrics and bear her husband's children," I answered.

"But I am not a woman," she pointed out. "I am just a little girl."

"But you will become a woman," I said, "and a woman may not read."

"Teach me now, and I will forget how when I become a woman."

"Does the eagle forget how to fly, or the hyena to kill?"

KIRINYAGA

"It is not fair."

"No," I said. "But it is just."

"I do not understand."

"Then I will explain it to you," I said. "Sit down, Kamari."

She sat down on the dirt opposite me and leaned forward intently.

"Many years ago," I began, "the Kikuyu lived in the shadow of Kirinyaga, the mountain upon which Ngai dwell."

"I know," she said. "Then the Europeans came and built their cities."

"You are interrupting," I said.

"I am sorry, Koriba," she answered. "But I already know this story."

"You do not know all of it," I replied. "Before the Europeans came, we lived in harmony with the land. We tended our cattle and plowed our fields, we produced just enough children to replace those who died of old age and disease, and those who died in our wars against the Maasai and the Wakamba and the Nandi. Our lives were simple but fulfilling."

"And *then* the Europeans came!" she said.

"Then the Europeans came," I agreed, "and they brought new ways with them."

"Evil ways."

I shook my head. "They were not evil ways for the Europeans," I replied. "I know, for I have studied in European schools. But they were not good ways for the Kikuyu and the Maasai and the Wakamba and the Embu and the Kisi and all the other tribes. We saw the clothes they wore and the buildings they erected and the machines they used, and we tried to become like Europeans. But we are not Europeans, and their ways are not our ways, and they do not work for us. Our cities became

overcrowded and polluted, and our land grew barren, and our animals died, and our water became poisoned, and finally, when the Eutopian Council allowed us to move to the world of Kirinyaga, we left Kenya behind and came here to live according to the old ways, the ways that are good for the Kikuyu." I paused. "Long ago the Kikuyu had no written language, and did not know how to read, and since we are trying to create a Kikuyu world here on Kirinyaga, it is only fitting that our people do not learn to read or write."

"But what is good about not knowing how to read?" she asked. "Just because we didn't do it before the Europeans came doesn't make it bad."

"Reading will make you aware of other ways of thinking and living, and then you will be discontented with your life on Kirinyaga."

"But *you* read, and you are not discontented."

"I am the *mundumugu*," I said. "I am wise enough to know that what I read are lies."

"But lies are not always bad," she persisted. "You tell them all the time."

"The *mundumugu* does not lie to his people," I replied sternly.

"You call them stories, like the story of the lion and the hare, or the tale of how the rainbow came to be, but they are lies."

"They are parables," I said.

"What is a parable?"

"A type of story."

"Is it a true story?"

"In a way."

"If it is true in a way, then it is also a lie in a way, is it not?" she replied, and then continued before I could answer her. "And if I can listen to a lie, why can I not read one?"

"I have already explained it to you."

"It is not fair," she repeated.

"No," I agreed. "But it is true, and in the long run it is for the good of the Kikuyu."

"I still don't understand why it is good," she complained.

"Because we are all that remain. Once before the Kikuyu tried to become something that they were not, and we became not city-dwelling Kikuyu, or bad Kikuyu, or unhappy Kikuyu, but an entirely new tribe called Kenyans. Those of us who came to Kirinyaga came here to preserve the old ways—and if women start reading, some of them will become discontented, and they will leave, and then one day there will be no Kikuyu left."

"But I don't want to leave Kirinyaga!" she protested. "I want to become circumcised, and bear many children for my husband, and till the fields of his *shamba*, and someday be cared for by my grandchildren."

"That is the way you are supposed to feel."

"But I also want to read about other worlds and other times."

I shook my head. "No."

"But—"

"I will hear no more of this today," I said. "The sun grows high in the sky, and you have not yet finished your tasks here, and you must still work in your father's *shamba* and come back again this afternoon."

She arose without another word and went about her duties. When she finished, she picked up the cage and began walking back to her *boma*.

I watched her walk away, then returned to my hut and activated my computer to discuss a minor orbital adjustment with Maintenance,

for it had been hot and dry for almost a month. They gave their consent, and a few moments later I walked down the long winding path into the center of the village. Lowering myself gently to the ground, I spread my pouchful of bones and charms out before me and invoked Ngai to cool Kirinyaga with a mild rain, which Maintenance had agreed to supply later in the afternoon.

Then the children gathered about me, as they always did when I came down from my *boma* on the hill and entered the village.

"*Jambo*, Koriba!" they cried.

"*Jambo*, my brave young warriors," I replied, still seated on the ground.

"Why have you come to the village this morning, Koriba?" asked Ndemi, the boldest of the young boys.

"I have come here to ask Ngai to water our fields with His tears of compassion," I said, "for we have had no rain this month, and the crops are thirsty."

"Now that you have finished speaking to Ngai, will you tell us a story?" asked Ndemi.

I looked up at the sun, estimating the time of day.

"I have time for just one," I replied. "Then I must walk through the fields and place new charms on the scarecrows, that they may continue to protect your crops."

"What story will you tell us, Koriba?" asked another of the boys.

I looked around, and saw that Kamari was standing among the girls.

"I think I shall tell you the story of the Leopard and the Shrike," I said.

"I have not heard that one before," said Ndemi.

"Am I such an old man that I have no new stories to tell?" I demanded, and he dropped his gaze to the ground. I waited until I had everyone's attention, and then I began:

"Once there was a very bright young shrike, and because he was very bright, he was always asking questions of his father.

" 'Why do we eat insects?' he asked one day.

" 'Because we are shrikes, and that is what shrikes do,' answered his father.

" 'But we are also birds,' said the shrike. 'And do not birds such as the eagle eat fish?'

" 'Ngai did not mean for shrikes to eat fish,' said his father, 'and even if you were strong enough to catch and kill a fish, eating it would make you sick.'

" 'Have you ever eaten a fish?' asked the young shrike.

" 'No,' said his father.

" 'Then how do you know?' said the young shrike, and that afternoon he flew over the river, and found a tiny fish. He caught it and ate it, and he was sick for a whole week.

" 'Have you learned your lesson now?' asked the shrike's father, when the young shrike was well again.

" 'I have learned not to eat fish,' said the shrike. 'But I have another question.'

" 'What is your question?' asked his father.

" 'Why are shrikes the most cowardly of birds?' asked the shrike. 'Whenever the lion or the leopard appears, we flee to the highest branches of the trees and wait for them to go away.'

" 'Lions and leopards would eat us if they could,' said the shrike's father. 'Therefore, we must flee from them.'

" 'But they do not eat the ostrich, and the ostrich is a bird,' said the bright young shrike. 'If they attack the ostrich, he kills them with his kick.'

" 'You are not an ostrich,' said his father, tired of listening to him.

" 'But I am a bird, and the ostrich is a bird, and I will learn to kick as the ostrich kicks,' said the young shrike, and he spent the next week practicing kicking any insects and twigs that were in his way.

"Then one day he came across *chui*, the leopard, and as the leopard approached him, the bright young shrike did not fly to the highest branches of the tree, but bravely stood his ground.

" 'You have great courage to face me thus,' said the leopard.

" 'I am a very bright bird, and I am not afraid of you,' said the shrike. 'I have practiced kicking as the ostrich does, and if you come any closer, I will kick you and you will die.'

" 'I am an old leopard, and cannot hurt any longer,' said the leopard. 'I am ready to die. Come kick me, and put me out of my misery.'

"The young shrike walked up to the leopard and kicked him full in the face. The leopard simply laughed, opened his mouth, and swallowed the bright young shrike.

" 'What a silly bird,' laughed the leopard, 'to pretend to be something that he was not! If he had flown away like a shrike, I would have gone hungry today—but by trying to be what he was never meant to be, all he did was fill my stomach. I guess he was not a very bright bird after all.' "

I stopped and stared straight at Kamari.

"Is that the end?" asked one of the other girls.

"That is the end," I said.

"Why did the shrike think he could be an ostrich?" asked one of the small boys.

"Perhaps Kamari can tell you," I said.

All the children turned to Kamari, who paused for a moment and then answered.

"There is a difference between wanting to be an ostrich, and wanting to know what an ostrich knows," she said, looking directly into my eyes. "It was not wrong for the shrike to want to know things. It was wrong for him to think he could become an ostrich."

There was a momentary silence while the children considered her answer.

"Is that true, Koriba?" asked Ndemi at last.

"No," I said, "for once the shrike knew what the ostrich knew, it forgot that it was a shrike. You must always remember who you are, and knowing too many things can make you forget."

"Will you tell us another story?" asked a young girl.

"Not this morning," I said, getting to my feet. "But when I come to the village tonight to drink *pombe* and watch the dancing, perhaps I will tell you the story about the bull elephant and the wise little Kikuyu boy. Now," I added, "do none of you have chores to do?"

The children dispersed, returning to their shambas and their cattle pastures, and I stopped by Siboki's hut to give him an ointment for his joints, which always bothered him just before it rained. I visited Koinnaga and drank *pombe* with him, and then discussed the affairs of the village with the Council of Elders. Finally I returned to my own *boma*, for I always take a nap during the heat of the day, and the rain was not due for

another few hours.

Kamari was there when I arrived. She had gathered more wood and water, and was filling the grain buckets for my goats as I entered my *boma*.

"How is your bird this afternoon?" I asked, looking at the pygmy falcon, whose cage had been carefully placed in the shade of my hut.

"He drinks, but he will not eat," she said in worried tones. "He spends all his time looking at the sky."

"There are things that are more important to him than eating," I said.

"I am finished now," she said. "May I go home, Koriba?"

I nodded, and she left as I was arranging my sleeping blanket inside my hut.

She came every morning and every afternoon for the next week.

Then, on the eighth day, she announced with tears in her eyes that the pygmy falcon had died.

"I told you that this would happen," I said gently. "Once a bird has ridden upon the winds, he cannot live on the ground."

"Do all birds die when they can no longer fly?" she asked.

"Most do," I said. "A few like the security of the cage, but most die of broken hearts, for having touched the sky they cannot bear to lose the gift of flight."

"Why do we make cages, then, if they do not make the birds feel better?"

"Because they make *us* feel better," I answered.

She paused, and then said: "I will keep my word and clean your hut and your *boma*, and fetch your water and kindling, even though the bird is dead."

KIRINYAGA

I nodded. "That was our agreement," I said.

True to her word, she came back twice a day for the next three weeks. Then, at noon on the twenty-ninth day, after she had completed her morning chores and returned to her family's *shamba*, her father, Njoro, walked up the path to my *boma*.

"*Jambo*, Koriba," he greeted me, a worried expression on his face.

"*Jambo*, Njoro," I said without getting to my feet. "Why have you come to my *boma*?"

"I am a poor man, Koriba," he said, squatting down next to me. "I have only one wife, and she has produced no sons and only two daughters. I do not own as large a *shamba* as most men in the village, and the hyenas killed three of my cows this past year."

I could not understand his point, so I merely stared at him, waiting for him to continue.

"As poor as I am," he went on, "I took comfort in the thought that at least I would have the bride-prices from my two daughters in my old age." He paused. "I have been a good man, Koriba. Surely I deserve that much."

"I have not said otherwise," I replied.

"Then why are you training Kamari to be a *mundumugu*?" he demanded. "It is well known that the *mundumugu* never marries."

"Has Kamari told you that she is to become a *mundumugu*?" I asked.

He shook his head. "No. She does not speak to her mother or myself at all since she has been coming here to clean your *boma*."

"Then you are mistaken," I said. "No woman may be a *mundumugu*. What made you think that I am training her?"

He dug into the folds of his *kikoi* and with-

drew a piece of cured wildebeest hide. Scrawled on it in charcoal was the following inscription:

I AM KAMARI

I AM TWELVE YEARS OLD

I AM A GIRL

"This is writing," he said accusingly. "Women cannot write. Only the *mundumugu* and great chiefs like Koinnage can write."

"Leave this with me, Njoro," I said, taking the hide, "and send Kamari to my *boma*."

"I need her to work on my *shamba* until this afternoon."

"Now," I said.

He sighed and nodded. "I will send her, Koriba." He paused. "You are certain that she is not to be *mundumugu*?"

"You have my word," I said, spitting on my hands to show my sincerity.

He seemed relieved, and went off to his *boma*. Kamari came up the path a few minutes later.

"*Jambo*, Koriba," she said.

"*Jambo*, Kamari," I replied. "I am very displeased with you."

"Did I not gather enough kindling this morning?" she asked.

"You gathered enough kindling."

"Were the gourds not filled with water?"

"The gourds were filled."

"Then what did I do wrong?" she asked, absently pushing one of my goats aside as it approached her.

"You broke your promise to me."

"That is not true," she said. "I have come every morning and every afternoon, even though the bird is dead."

"You promised not to look at another book," I said.

"I have not looked at another book since the day you told me that I was forbidden to."

"Then explain *this*," I said, holding up the hide with her writing on it.

"There is nothing to explain," she said with a shrug. "I wrote it."

"And if you have not looked at books, how did you learn to write?" I demanded.

"From your magic box," she said. "You never told me not to look at *it*."

"My magic box?" I said, frowning.

"The box that hums with life and has many colors."

"You mean my computer?" I asked, surprised.

"Your magic box," she repeated.

"And it taught you how to read and write?"

"I taught me—but only a little," she said unhappily. "I am like the shrike in your story—I am not as bright as I thought. Reading and writing are very difficult."

"I told you that you must not learn to read," I said, resisting the urge to comment on her remarkable accomplishment, for she had clearly broken the law.

Kamari shook her head.

"You told me I must not look at your books," she replied stubbornly.

"I told you that women must not read,"

I said. "You have disobeyed me. For this you must be punished." I paused. "You will continue your chores here for three more months, and you must bring me two hares and two rodents, which you must catch yourself. Do you understand?"

"I understand."

"Now come into my hut with me, that you may understand one thing more."

She followed me into the hut.

"Computer," I said. "Activate."

"Activated," said the computer's mechanical voice.

"Computer, scan the hut and tell me who is here with me."

The lens of the computer's sensor glowed briefly.

"The girl, Kamari wa Njoro, is here with you," replied the computer.

"Will you recognize her if you see her again?"

"Yes."

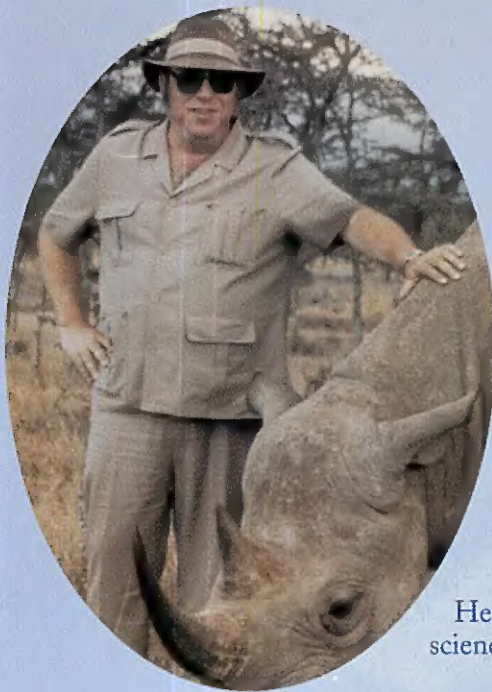
"This is a Priority Order," I said. "Never again may you converse with Kamari wa Njoro verbally or in any known language."

"Understood and logged," said the computer.

"Deactivate." I turned to Kamari. "Do you understand what I have done, Kamari?"

"Yes," she said. "And it is not fair. I did not disobey you."

"It is the law that women may not read," I said, "and you have broken it. You will not break it again. Now go back to your *shamba*."



About the Author

Q: Which Del Rey author has bred collies, posed for a photograph with a rhinoceros, and written over seventy-one science fiction novels?

Give up?

A: Mike Resnick

Here are some other things you might not have known about one of science fiction's most prolific and celebrated writers:

Mike Resnick has been writing for over forty years. He sold his first article in 1957, his first short story in 1959, and astonishingly, wrote over two hundred novels in a variety of genres between 1964 and 1976.

Talent would seem to be genetic: Mike and his wife, Carol, have a daughter, Laura, who has herself won two awards in the romance field and the 1993 Campbell Award for Best New Science Fiction Writer.

Carol Resnick has always been Mike's uncredited collaborator. Within the past few years, they've started writing screenplays together, under both names. At present, they are working on screenplays for two previous Resnick novels, both under development as feature films.

Mike Resnick has won three Hugos, two of which were for KIRINYAGA stories, and every "chapter" in KIRINYAGA has at least one major award nomination; in fact, KIRINYAGA is the most highly honored book in the history of the field, with a total of fifty-seven major and minor awards and nominations. Not to mention the Nebula, the international awards, or the dozens of major award nominations for other works.

Mike and Carol have traveled extensively in Africa, the model for the terraformed Kirinyaga. They've visited Kenya, Tanzania, Malawi, Zimbabwe, Egypt, and Botswana. Daughter Laura also wrote a book about traveling in Africa. In addition to writing travelogues and editing several different series about Africa, Mike has written two previous novels, *Ivory* and *Paradise*, that were influenced by his African adventures.

While the chapters of KIRINYAGA were published as individual stories, Mike conceived of them as a whole. "I originally got the idea on one of our trips to Africa, and while I wrote the chapters as stories, I always imagined them more as episodic chapters," he explains. Mike also thinks that "KIRINYAGA is the best thing I've ever written."

Mike frequently attends conventions, where he enjoys talking to fans, and says that "it's how I find out what my readers really think." Check out the Del Rey Web site (<http://www.randomhouse.com/delrey>) for a list of Mike's upcoming appearances, which are currently scheduled to include:

Astronomicon (Rochester, NY) and Millenicon (Cincinnati, OH) in March and InConjunction (Indianapolis, IN) next July. Cons on our regular schedule include Oasis (Orlando, FL) in May, Midwestcon (Cincinnati, OH) in June, Rivercon (Louisville, KY) in August, and Worldcon and Tropicon (Ft. Lauderdale, FL) in November.

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KIRINYAGA

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